

290.8
C 765
C 765

Contractors and Engineers

APRIL 1953

LIBRARY
CURRENT SERIAL 1-64430
★ APR 24 1953 ★
U.S. DEPARTMENT OF AGRICULTURE

This floating concrete plant is in position to pour another pier for Florida's Tampa Bay Bridge. The cement barge tied to the plant has eight specially built Heltzel hopper bins that unload bulk cement through enclosed worm-gear conveyors. See Story on page 26.



Constructing a plant-mixed Texaco Asphalt pavement of the cold-laid type on Indiana State Highway 28 near Alexandria. Old pavement was widened and undersealed with asphalt. Contractor — Brooks Construction Co., Fort Wayne, Ind.

Indiana gives old highway a new **intermediate-type Asphalt surface**

Indiana chose one of the intermediate types of asphalt construction when it modernized this section of State Route 28 last year. The new surface is of the plant-mixed, cold-laid type, in which a Texaco Rapid-curing Cutback Asphalt serves as binder for the broken stone aggregate. This surface was put down in two courses, with an interval of five days between courses for curing and setting up. A seal coat of RC Cutback, covered with chips, completed the new pavement.

This is another of the complete range of road and street types which Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils offer the road builder. These types vary in durability and in cost. Among them, you will find the answer to your own street, highway or airport improvement problem, with due consideration being given to traffic, available aggregate and budget limitations.

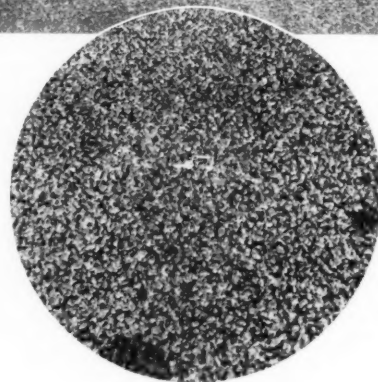
Whether used in a heavy-duty pavement or an inexpensive surface-treatment, Texaco Asphalt products deliver a consistently dependable performance, because they are refined from scientifically selected crudes and are backed by half a century of asphalt refining experience.

Helpful information about the various plant-mixed types of Texaco Asphalt paving, as well as those types in which Texaco products are applied by pressure distributor, is presented in two booklets which our nearest office will send you with no obligation on your part.



(above) Completed section of this intermediate type of Texaco Asphalt paving on Route 28.

(right) Close-up of the new pavement prior to application of the seal coat of Texaco RC Cutback Asphalt.



THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York 17
Boston 16 (20 Providence St.) • Chicago 4 (332 So. Michigan Ave.) • Houston 1 (720 San Jacinto St.)
Jacksonville 2 (Hildebrandt Bldg.) • Denver 1 (P. O. Box 2100) • Philadelphia 2 (1411 Walnut St.)
Richmond 19, Va. (Mutual Assurance Society Bldg.) • Minneapolis 3 (Groveland Ave.-Clifton Pl.)



TEXACO ASPHALT

EDITORIAL

Someone Must Pay for Good Roads

"It costs less to have good roads than it does to put up with poor ones". These are the words of L. Judson Morhouse, Executive Director of the New York Good Roads Association.

The "something for nothing" school of thought, as Mr. Morhouse pointed out, not unreasonably, in a recent letter to the New York State Legislature, will not produce a modern highway system. Money is the unavoidable necessity, and more of it must be added to the state budget. How? By increased taxes, Mr. Morhouse believes.

It is both unfair and misleading to imply that the State is diverting highway-user tax revenues to non-highway purposes, says Morhouse. This conflicts with the opinion of organized highway-user groups such as petroleum companies, automobile clubs, etc. Mr. Morhouse, however, declares that the State is actually making more money available for highways than it receives from such taxes. The history of highway promotion in New York State, he observes, has been a history of special-interest groups striving to eat the highway pie and have it too. While constantly demanding better roads, they have always shifted the responsibility of paying for them onto the shoulders of the next group.

Conflicting self interests will not yield to anything except an independent impartial tribunal. Such a tribunal is the Temporary Highway

Finance Planning Commission, created in 1952 and supported by the New York Good Roads Association. The recommendations of the Commission are not yet known, but the Superintendent of Public Works has estimated that the highway needs of the State are around \$288,000,000 a year—well over \$100,000,000 more than is being appropriated from current taxes.

The occasion for Mr. Morhouse's letter was the proposed increase of 2 cents on New York State's gasoline tax. New York's present 4-cent tax, he points out, is one of the lowest in the nation. The proposed additional 2 cents would bring it on a par with nine other states whose 6-cent tax puts them in the fourth highest group (leaving four groups with a lower gasoline-tax rate). Florida, Kentucky, Louisiana, Mississippi, the Carolinas, and Tennessee all pay a gasoline tax of 7 cents per gallon; Oklahoma pays 6.58 cents; and Arkansas and Washington, 6.5 cents. Then come the nine states paying 6 cents; 17 paying 5 cents; three paying 4.5 cents; eight (including New York at the present time) paying 4 cents; and two (Missouri and New Jersey) which only pay 3 cents.

Taxation is never popular, but it is hard to think of another answer. If the proposal goes through, it might be a good move to put in an anti-diversion constitutional amendment affecting at least the additional 2 cents.

Nobody Benefits

Out in Arizona, a paving contractor who has purposely stayed small in order to stay close to his men and jobs recently had a typical experience which illustrates how nobody benefits when union regulations prevent the use of common sense.

This contractor had a small job, as Arizona projects go: 3.3 miles of hot-mix for slightly over \$200,000. He used union help from the halls. The proper unions were represented, and things were going along fine.

Suddenly one morning a water-pump operator sprained his wrist when a gasoline engine kicked. His injury wasn't serious enough to keep him out a week, as Arizona laws require to get compensation. The man had a wife and kids depending on him. These things the contractor knew, and because the operator was a good man with a long and loyal record, he thought up something to help. He'd give the man a job flagging traffic for a few days until his wrist got well.

But the laborer's union steward wouldn't permit it.

About the same time this contractor's one water truck wasn't quite enough to keep the subbase wet and supply boiler water to the asphalt plant. It was the kind of situation most superintendents face a dozen times a week. The contractor knew of an excellent County Road Department water truck not

in use. He used his common sense, and rented the unit by the day. He had to take the county driver, because that was the only way the county would let it go.

The water truck hadn't been on the job an hour before the contractor faced a full-scale walkout. He continued with the county water truck only by hiring a union-hall truck driver who rode along as excess baggage.

It does nobody good when these things happen. It prevents a contractor from running his job efficiently by denying him the latitude he needs to exercise. It wastes labor, and Arizona's and the nation's roads are not in such shape that labor can be wasted. It delays the completion of our badly needed highway system. Worse yet, it weakens the moral fiber of America's labor by training men to take pay for doing nothing.

Jobs on contract work will continue only so long as contractors have latitude to manage their projects profitably. Maybe the union stewards were right and the contractor was wrong in the example cited—we won't argue the point. But if construction is to continue on a profitable basis for contractors and labor alike, it is high time that labor got together with management and worked out a program where things that benefit nobody are outlawed.

Contractors and Engineers

The NEWS magazine of the construction industry

April, 1953

Aggregate Production

Gravel is processed by heavy-media flotation . . . 127

Airports

Sawing the contraction joints in concrete runways at Lockbourne Air Force Base . . . 12
Gratation requirements posed tricky problems in a parking-apron improvement contract . . . 52

Bridges

Lower Tampa Bay, Fla., is being spanned. Prestressed concrete for trestle. Story, pix . . . 26
Bridge piers built to bedrock below riverbed . . . 61

Building Construction

Concrete roof slabs in tilt-up construction . . . 6
An 11-story office building went up despite quicksand and strikes . . . 21
Another new hospital is being constructed . . . 38
A 2-level school of steel, concrete, and brick . . . 106

Dam

Outlet conduit for San Antonio dam. Story, pix . . . 8

Dredging

Dredge enlarges canal for hydroelectric project . . . 113

Highways

Prestressed concrete highways tried out in England . . . 44
Heavy rock grading for a New England road . . . 72
Rebuilding a highway in the mountainous west . . . 89
Description of new Turner Turnpike base course . . . 123

Management

Planning, application of materials available, and tractor power move a 1,900-ton water tower . . . 85

Paving

A gravel and asphalt road-mix surface . . . 67
Truck mixers deliver concrete for a street-widening project . . . 82
Bituminous plant-mix for a 57.7-mile widening and resurfacing job. Pix, story . . . 96

Roadside Development

A review of mulching practices . . . 134

Tunnel

New concrete-placing machine used in lining a 10½-foot-diameter pressure conduit . . . 77

Departments

Avoid Legal Pitfalls . . . 99
Convention Calendar . . . 105
Distributor Doings . . . 117
Editorial . . . 3
Manufacturer Memos . . . 142
Names in the News . . . 5
News and Views . . . 4

WILLIAM H. QUIRK, Editor
ALBERT C. SMITH CATHERINE J. HEARN
Associate Editors
RAYMOND P. DAY L. H. HOUCK
Contributing Editors

EDGAR J. BUTTENHEIM, President MYRON MACLEOD, Advertising Manager
GEORGE S. CONOVER, Vice President EDWARD GEORGE ALLEN, JR., Business Manager
DONALD V. BUTTENHEIM, Publisher EDGAR M. BUTTENHEIM, Asst. Advertising Manager
EDWIN WAGNER, Secretary and Treasurer CURTIS R. BUTTENHEIM, Southern Sales Manager

ISSUED BY Buttenheim-Dix Publishing Corp.
470 Fourth Ave., New York 16, N. Y.

Chicago 6, Ill., 1719 Daily News Bldg. • George S. Conover, Warner H. Robinson, Arthur B. Burgan
Cleveland 14, Ohio, 420 Leader Bldg. • Robert C. Burton
Los Angeles 27, Calif., 2238 Ben Lomond Drive • Albert T. Miller, Pacific Coast Manager

Vol. 50, No. 4

\$4 a Year, 50 Cents a Copy

Acceptance under Section 34.64 P.L.&R. authorized

NEWS AND VIEWS

of the Construction Industry — Big Construction Year, Highway Financing, Sufficiency Ratings



Here's a new use for a Lorain Moto-Crane—setting a totem pole for a new Seattle shopping center.



C. P. Street, (left), was elected President, and John MacLeod, Vice President of the AGC for 1953.

The **record-breaking boom** in the number of contract awards during the last few months, plus the swift decontrol of civilian projects, gives every hint that construction activity in 1953 will surpass even the most liberal estimates.

The first two months of the year set a record with \$2.91 billion of new awards, **47 per cent ahead of 1952**. The biggest forces behind the boom were commercial building—up 131 per cent; and private mass housing—up 75 per cent. One of the biggest surprises was the 53 per cent gain in industrial building; early estimates had predicted a sharp decline this year.

Highway awards were 14 per cent higher than in the comparable period last year. Sewerage work topped all other public construction with a gain of 113 per cent.

The boom, however, has not been felt equally throughout the country. Both the middle west and New England reported activity well over 100 per cent of last year, while the south actually showed a decline. This difference will probably be reduced as the year moves on.

Record-breaking activity is certain to continue, especially now that the National Production Authority has virtually **freed civilian construction projects from Government regulation**. The industry is no longer required to apply to NPA for authority to commence or continue civilian projects. In addition, owners can now determine whether or not they can secure the materials for their projects and can proceed without the Government. The Associated General Contractors welcomes the NPA action because it feels that decontrol will "stimulate the advance planning of both public and private projects to be undertaken at times the governmental bodies or owners consider most appropriate, without recourse to the Federal Government."

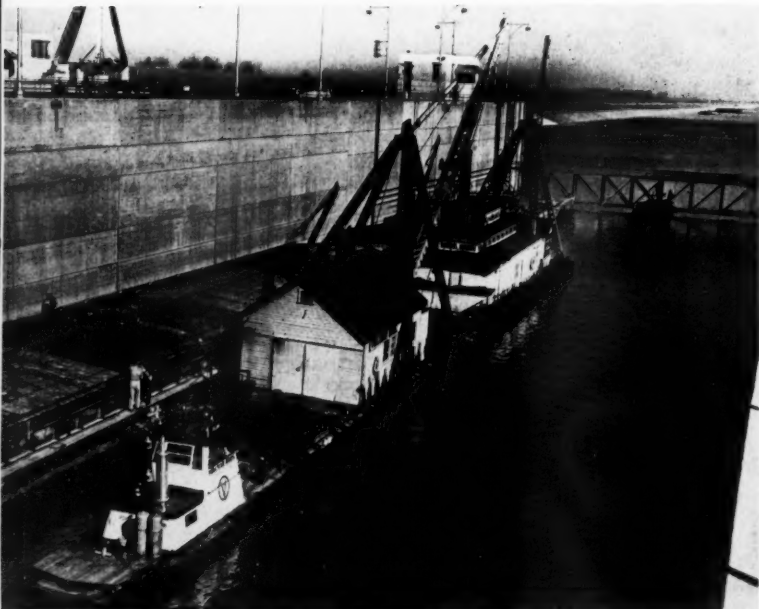
But as far as highways are concerned, it is going to take more than decontrol to salvage

our overburdened system—it is going to take **money, and lots of it.**

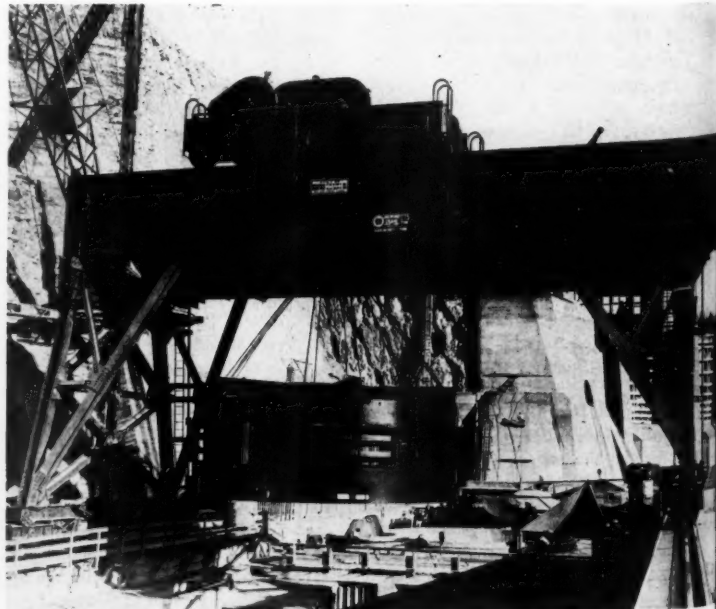
Here are some of the highway fund-raising proposals brought up this year in a number of state legislatures. Gasoline-tax-rate boosts have been proposed in at least 17 states. Legislation to curb abuses of gasoline-tax refunds or exemptions have been brought up in 5 states. Revenue bonds or borrowing to raise money are under discussion in 9 states. Thirteen states are considering increasing or broadening truck taxes. Other methods proposed include higher registration fees for passenger cars, and non-highway taxes.

Federal sources of highway revenue under close scrutiny these days are the automotive excise taxes. Resolutions to Congress concerning these taxes have been introduced in the legislatures of 25 states. Some urge repeal of all such taxes, others call for elimination of motor-fuel tax, while still others ask return of revenues from Federal automotive excise taxes to the states for highway purposes. The Federal Government now returns to the state highway departments about 25 per cent of the \$2 billion that it collects annually from highway users.

In the meantime, however, road-building agencies are still confronted with the problem of **doing the most with what they have**. Some highway departments are trying to solve their "first-things-first" policy through the use of sufficiency ratings. Supported by a number of highway promotional organizations, the system is a way of evaluating a section of street or road based on its safety, service, and condition. The SR gives an accurate inventory of a highway network, and, if kept up-to-date, shows whether progress is being made and where. To urge further use of this business-like approach, the National Highway Users Conference has announced that it will make annual awards to the highway departments preparing the **best yearly reports to the public on the status of their road systems.**



Vollmar Bros. Construction Co.'s derrick barge, Joseph Lewis, makes the first passage through the \$40,000,000 Chain of Rocks canal, near St. Louis, Mo.



This 275-ton Bedford gantry crane sets the third of 4 big generators for the new Cabinet Gorge hydroelectric station near Clark Fork, Idaho.

Names in the News



Charles A. Richardson, a new Vice President of Merritt-Chapman & Scott Corp., New York, N. Y.

M-C&S Vice President

Charles A. Richardson is a new Vice President of Merritt-Chapman & Scott Corp., New York, N. Y., in charge of the company's New York Marine & Heavy Construction Division. Mr. Richardson has been with the organization since 1935 and has served on many construction jobs as project manager in the field. While in charge of M-C&S operations in the Boston area his projects included Boston's 3-berth Mystic Pier No. 1, river piers for the Mystic River Bridge, and the Long Island Viaduct in lower Boston harbor. Previously he had worked on the Washburn Tunnel beneath the Houston Ship Channel at Pasadena, Texas, an ore dock at Escanaba, Mich., a section of New York City's East River Drive, and other M-C&S projects throughout the United States.

Mr. Richardson succeeds William Denny, now Executive Vice President and General Manager.

O'Donnell for Industry On Advisory Committee

John J. O'Donnell, President of the National Constructors Association, has been named one of the industry representatives on a 15-member committee of leading labor, industry, and public officials appointed by Secretary of Labor Martin P. Durkin to advise the Administration on labor policies.

Mr. O'Donnell is Personnel and Relations Manager of the Lummus Co., designer and builder of petroleum refineries and chemical plants. Prior to joining that company, he was Personnel Director for the Eclipse-Pioneer Division of Bendix Aviation Corp., Teterboro, N. J.

Gen. Robinson Chairman of Rivers and Harbors Board

Brig. Gen. Bernard L. Robinson, recently appointed Army Assistant of Engineers, has been named Chairman of the Board of Engineers for Rivers and Harbors in addition to his other duties.

The Board, composed of seven senior Corps of Engineers officers, was established by Act of Congress in 1902. It reviews proposed river

and harbor and flood-control projects investigated by the Corps of Engineers in accordance with Congressional directives.

ASCE Appoints Larsen

Harold T. Larsen has become Manager of Technical Publications for the American Society of Civil Engineers, New York, N. Y.

Mr. Larsen has been Editor of Technical Publications for the Association since 1930 and is a former

member of the civil-engineering faculty of the University of Illinois. He succeeds Sydney Wilmot, who has retired.

Mobley for Slag Association

Arthur B. Mobley recently joined the staff of the National Slag Association in the capacity of Engineer and Administrative Assistant. He will work in the field on engineering problems and assist the Managing Director, E. W. Bauman, in the Washington, D. C., headquarters office. Mr. Mobley comes to the Association from the Baltimore County Highway Department, where he served as Materials Engineer.

Constructors Elect Sturdy

Howard H. Sturdy was elected President of the Constructors Association of Western Pennsylvania at its 19th Annual Meeting held in the Hotel William Penn on February 12, Pittsburgh, Pa. Mr. Sturdy is Vice President of Dravo Corp., Pittsburgh.

Kuljian Liaison Engineer

The Kuljian Corp., engineer-contractor firm of Philadelphia, Pa., with branches abroad, has appointed Louis Jay Patrick as Government Liaison Engineer. In World War II Mr. Patrick was a Major in the Corps of Engineers, U. S. Army.



Eimco's Work Faster! Keep Job Costs Lower

Contractors, on all types of jobs, know that Eimco's will consistently save them money as an all around tool on general maintenance jobs, special repair jobs or new construction.

Take a job of loading sand or gravel. Eimco's will load from 4 to 6 yards per minute, and keep it up. This is a loading speed that invites comparison with heavier, more expensive equipment.

Eimco's are also good at digging unbroken ground for new roads, soil-silt deposits in riverbeds, taking up highway curb or shoulders, loading snow, clearing winter sluff, digging out frost blisters or digging ditches culverts or the toughest kind of rock loading.

Write for complete information on Eimcos stating your type of loading problem.

You Can't beat an Eimco

EIMCO

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines

EXECUTIVE OFFICES AND FACTORIES - SALT LAKE CITY 10, UTAH, U. S. A.

BRANCH SALES AND SERVICE OFFICES:

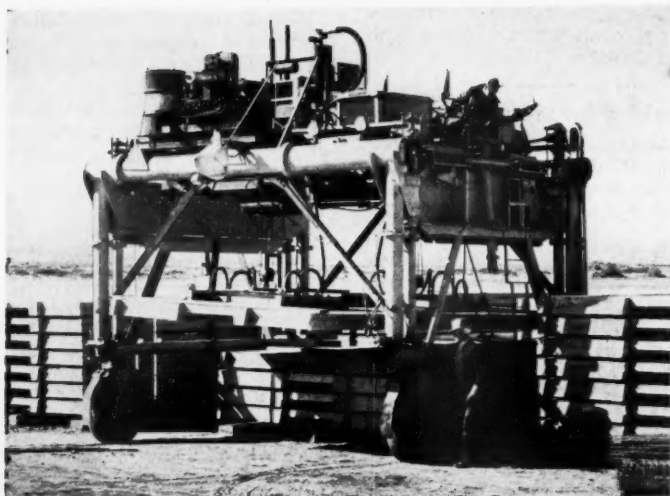
NEW YORK 51-52 SOUTH STREET • CHICAGO 3319 SOUTH WALLACE STREET
BIRMINGHAM 21A 3140 FAYETTE AVE • DULUTH MINN. 318 E SUPERIOR ST
EL PASO TEXAS MILLS BUILDING • BERKELEY CALIF 637 CEDAR STREET
KELLOGG, IDAHO 307 DIVISION ST • LONDON W 11 ENGLAND 190 PICCADILLY

IN FRANCE SOCIETE EIMCO PARIS FRANCE

IN ENGLAND EIMCO GREAT BRITAIN LTD LEEDS 12 ENGLAND

IN ITALY EIMCO ITALIA S.P.A. MILAN ITALY





The Monster places concrete roof slabs on the curing stacks. Note the vacuum grips at both ends and the electric hoists that lift the slabs into carrying position. At right, the mixed concrete being delivered to the steel forms.



Novel Rig for Roof Slabs

A novel rig, aptly nicknamed the Monster, was recently used at San Bernardino, Calif., to handle precast reinforced-concrete slabs for the tilt-up roofs of the 110 barracks and other buildings of the Marine Corps Artillery Training Facilities.

The Monster is the product of many hours of engineering at The Conveyor Co., Los Angeles, Calif., and it was constructed for the joint-venture contracting firm of Twaits-Morrison-Knudsen-Macco.

Construction at the 550-acre Marine camp site involved stripping the forms, and transporting the 1½ to 4-ton roof slabs to the curing area where they were to remain to dry out for 14 days in stacks with 2x4's between each. Transporting such cumbersome heavy slabs presented the problem which Conveyor engineers solved.

The engineers started with a Hyster CP-116 straddle truck and widened the vehicle an additional 5½ feet to give a 15-foot inside width. Road clearance was increased from 6½ feet to 12 feet to enable the Monster to stack the roof slabs seven high for the curing process. A 10-kva power generator was added to operate the two 3-ton electric hoists, and hydraulic power steering was needed for easier handling under heavy loads. In spite of all these changes, however, the straddle truck can be reduced to its original size and form by removing the extras added for this particular job.

Stripping the forms and stockpiling has been reduced to an efficient 8 to 10-minute cycle. The Monster is equipped with two patented vacuum-gripping units with 1-inch strips of rubber attached around the bottom edge. These strips permit a suction grip to the slab of approximately 10 psi when under vacuum. The two pad units have a combined gripping power of about 10,000 pounds. A 3-ton electric hoist suspended by trolleys from a beam above is fastened to each pad, and, due to hydraulic cylinders connected directly to each hoist, the hoists can move laterally as required to position centrally on the slab. Positions longitudinally are fixed, however, each gripping the slab about the center of the forward and rear half.

Special treatment of the forms is

CONTRACTORS AND ENGINEERS

FLECO Rock Rake

Relocating

State Highways



Caterpillar D8 Tractor equipped with Fleco Rock Rake clears and piles brush for relocation of Wisconsin State Highway No. 54 near Black River Falls, Wisconsin. Owner is Hoffman Construction Company of Black River Falls.

A Fleco Rock Rake mounted on a Caterpillar D8 Tractor was used for clearing and piling brush on a State Highway relocating job in the State of Wisconsin.

The contract for this operation consists of fifteen miles of widening out of roadway, grading and relocation, 225 ft. right-of-way.

The Fleco Rock Rake found many other uses on this project, including removing stumps and rock. This equipment is excellent on land clearing since it does not take the soil when dozing.

An additional advantage of the Fleco Rock Rake is in the special curve of the teeth which gives it suction and makes it possible to lift the heavy

rocks and boulders without the necessity of a deep dirt moving penetration to get started.

Your Fleco "Caterpillar" Dealer will be glad to show you many other uses for the versatile Fleco Rock Rake. Give him a call.

FLECO CORPORATION, JACKSONVILLE, FLORIDA

FLECO

STUMPERS • BRUSH RAKES
TREE CUTTERS • ROOT CUTTERS
ROOT RAKES • TREE DOZERS
UNDERCUTTERS • ROCK RAKES

necessary to facilitate stripping them from the concrete. Before pouring the slabs, the forms are sprayed with antibond compound to reduce cohesion of concrete to steel form. An air-vibrating screed is used to assure uniform compaction. The slabs are subjected to live-steam curing for approximately 13 hours, and then stripped on an 18 to 20-hour schedule. The Monster has become an essential part of the low-cost construction being used on this project. Its speed has reduced handling costs by a large percentage, and its versatility in slab-handling jobs is assured.

Approximately 5,000 roof slabs will be made and handled by the Monster on the Marine camp site project.

Mix-in-Place Mix-Up

To the Editor

CONTRACTORS AND ENGINEERS

With reference to the article on page 79 of your March issue titled "Mix-in-Place Machine Speeds Surfacing Job", we would like to bring to your attention a confusion of terms which is very prevalent even among highway engineers who should certainly know better. We note that the article speaks of "mixed-in-place construction". The contract was originally set up for mix-in-place construction. However, the contractor received the State's approval to use a travel-plant-mix method. There is an important difference. Mixed-in-place actually means that the aggregates are deposited on the base or roadbed and mixed at that point, either by manipulation of motor graders or by running some sort of mixed-in-place machine over the windrow. Consequently, the percentage of asphalt that is put into the mix is entirely dependent upon the uniformity with which the aggregate was laid down and the speed of the mixer or vehicle by which the asphalt was put into the windrow.

By contrast a travel-mix plant of the type of the Moto-Paver receives the material in the machine before it goes onto the roadbed and the proper proportions of the aggregate and asphalt are established in the machine prior to mixing so that much more uniform results are attained.

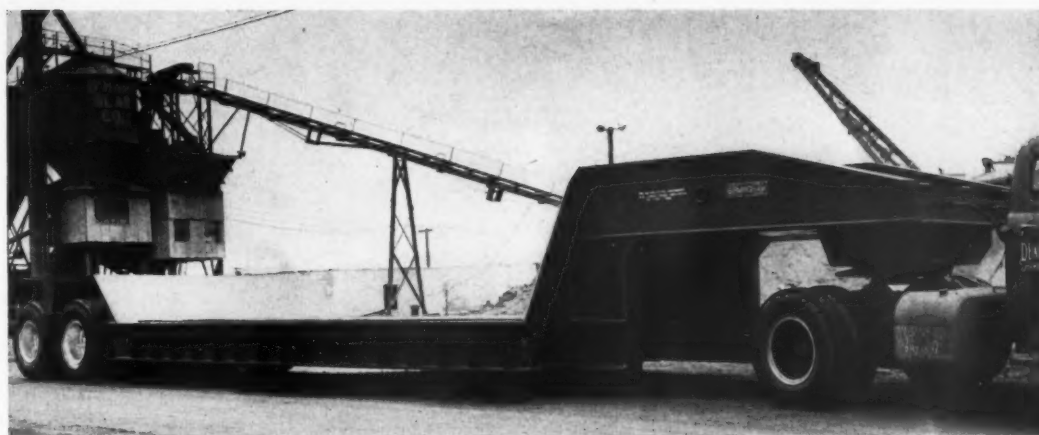
Please do not construe this as criticism of your article, which was extremely well written, but we wanted to take this occasion to point out a misuse of terms which is very common throughout the industry.

Very truly yours,
Robert B. Berner
Vice President
In Charge of Sales
Hetherington & Berner, Inc.

Concrete Additive

An additive said to increase concrete uniformity and strength and reduce drying shrinkage is described in a bulletin from The Sika Chemical Corp., 35 Gregory Ave., Passaic, N. J. The manufacturer states that use of Plastiment in concrete will reduce cracking and minimize flotation and segregation to give a harder surface. The booklet uses drawings of magnified concrete to show how the product works.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 783.



Deck size between drops on this low-bed trailer is 11 feet 7 inches x 24 feet 1 inch. The unit weighs 44,000 pounds and has 100-ton rating. For further information write to Birmingham Mfg. Co., Inc., Box 1351, Birmingham, Ala., or use the Request Card at page 18. Circle No. 748.



This Caterpillar DW10 Tractor and No. 15 Scraper are loading river gravel mixed with sand — a "dead" material, difficult to handle. Although haul distance is two miles, this husky yellow team moves 60 tons of gravel in 60 minutes. Owned by K. C. Dack of Milton, Ore., they are under hourly contract to repair a secondary road in Morrow County.

Mr. Dack has two DW10s with No. 15s hauling gravel on this job, push-loaded by a Cat* D8 Tractor. "They load faster, with bigger and better loads than any other scraper," he reports. The No. 15 Scraper is designed to be a real producer on long hauls. With its pumping action, it can get heaped loads of even "dead" material quickly and smoothly. And, with its low center of gravity, the No. 15 remains stable where the going is rough.

Its teammate, the Cat DW10 Tractor, can highball at speeds up to 24.5 m.p.h. Its long-lived Caterpillar

Diesel Engine delivers an honest 115 HP, on inexpensive No. 2 furnace oil. This rugged team is built to stay on the job without tinkering. Beefed-up construction and high-quality Caterpillar manufacture mean that it can earn you profits for years to come.

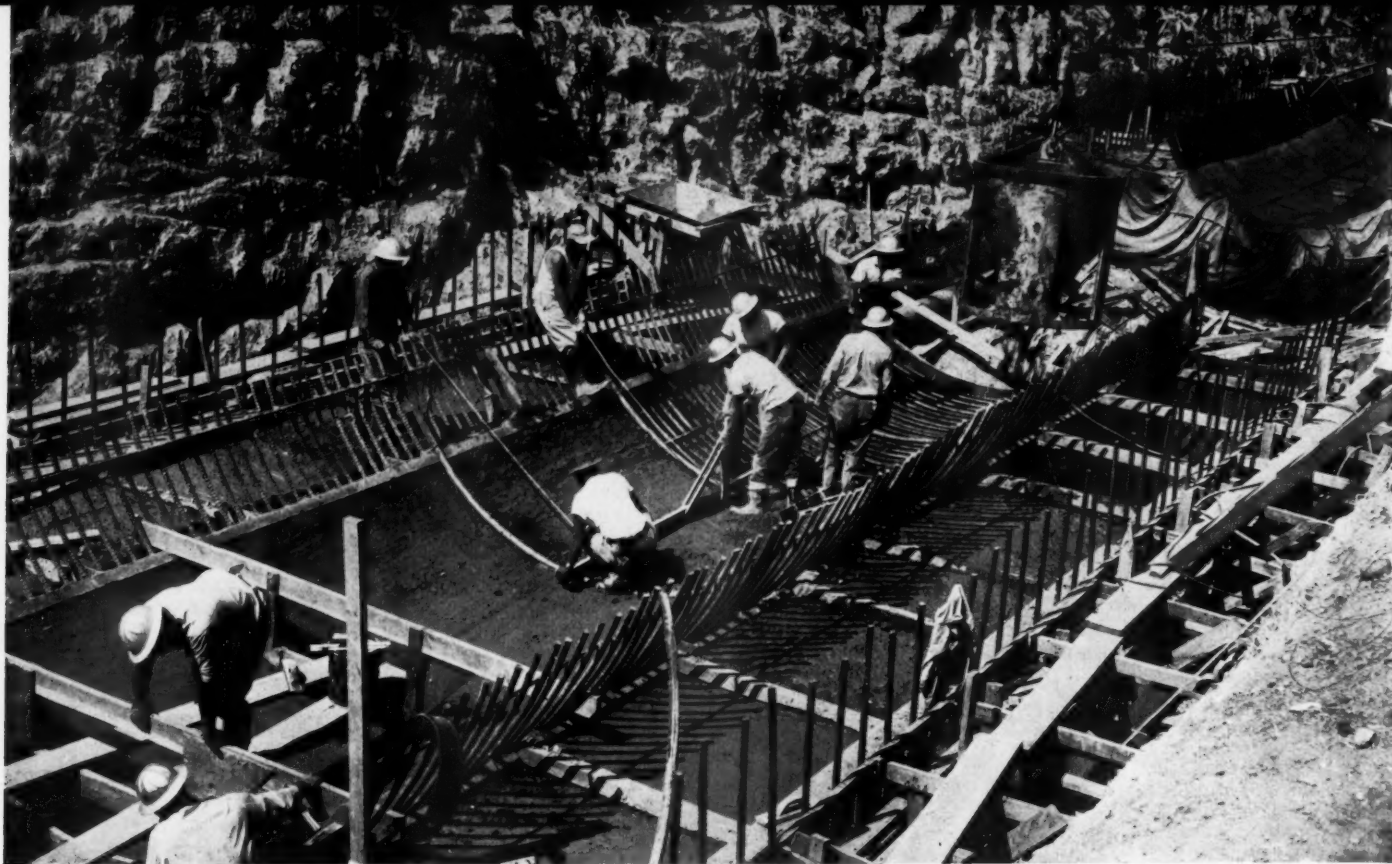
Your Caterpillar Dealer will gladly demonstrate the fast-hauling tractor and scraper that fit your needs. And you can rely on him for after-sales service and genuine factory parts. Call him today.

Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**



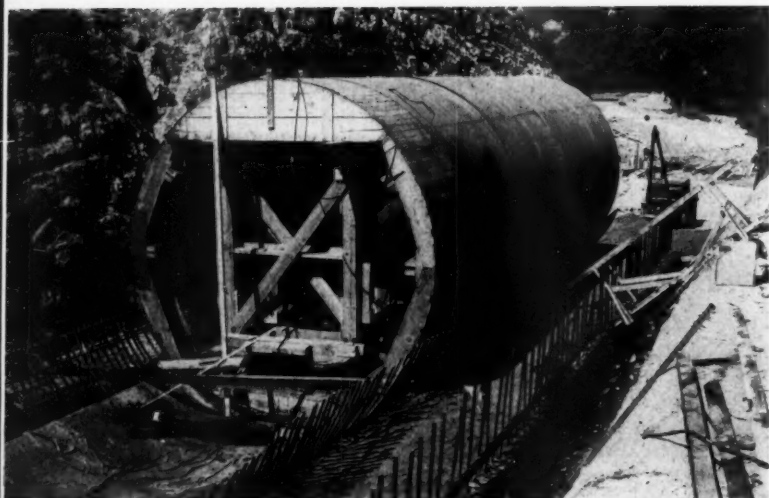
Workmen empty a Gar-Bro concrete bucket as an invert pour progresses on the outlet works conduit.

Corps of Engineers Photo

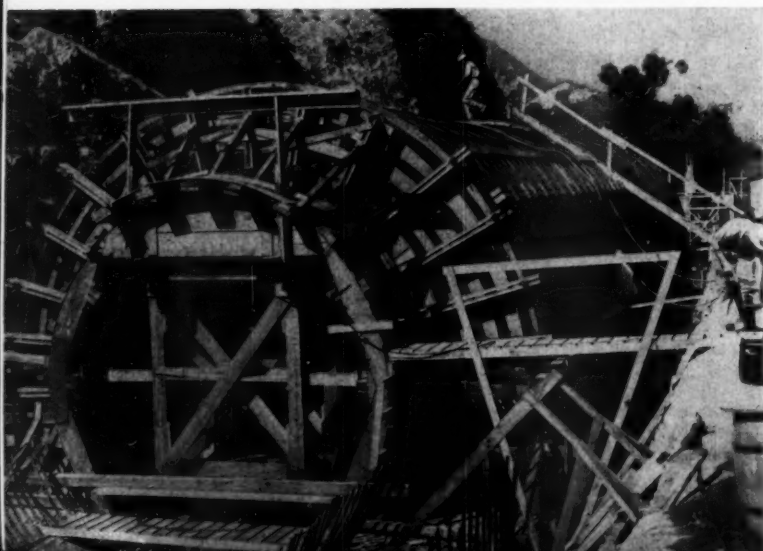
Dam Outlet Built Along Sliding Hillside

Close Quarters Complicate San Antonio Dam Work

By RAY DAY



This collapsible 40-foot-long timber form (above) molded the round wall of the conduit. Its sturdy frame and steel skin permitted numerous re-uses. (below) Ready for the pour.



• CONSTRUCTION men have an old adage about the trickiness of the little jobs. Near Claremont, Calif., where the Corps of Engineers has the \$500,000 first-stage contract of San Antonio Dam under way, the adage has again been proved. For close quarters between a sliding hillside and an active wash has made the construction of San Antonio's concrete outlet conduit and gate structure more than usually difficult. And there is a note of tragedy, too: Contractor K. B. Nicholas of Ontario, Calif., has been killed on the job, and Resident Engineer J. H. Heinmiller of the Corps of Engineers badly injured.

While the tragedy to Contractor Nicholas probably had little to do with the close working quarters, it is a fact that the organization and methods setup for making the excavation and placing the concrete had to take into account this unusual natural condition. And Mr. Nicholas personally planned the operations. No excess dirt or rock could be dumped into San Antonio Wash because of the flood potential during the winter rainy season, and sizable quantities of excavation and concrete had to be handled close up against a decomposed-granite moun-

tain side which had a bad tendency to slide.

The Nicholas contract, which is being completed under the administration of his estate, is the first step in what will eventually be added flood protection for southern California. Much of the vast watershed below Mount San Antonio (Mount Baldy) drains down San Antonio Wash and eventually empties through the Santa Anna River into the Pacific Ocean. Winter rains have turned San Antonio Wash into a raging flood torrent many times in the past, washing out transcontinental highways and railroad lines. Prevention of such disasters on the main tributary streams in southern California has long been a Corps of Engineers function, and the San Antonio project will be a continuation of the work begun when Prado, Hansen, Sepulveda, and other such dams were built.

San Antonio Dam will be an earth-fill structure 150 feet high from stream bed, with a fixed crest spillway. The present first-stage work calls only for the construction of the approach channel, gate structure, and outlet conduit. The channel at the end of the outlet structure extending to Prado Reservoir will

CONTRACTORS AND ENGINEERS



Workers compact backfill with Thor pneumatic tamper.

Ray Day Photo



Sprinklers along the top of the barrel supply water for the 14-day cure.

Corps of Engineers Photo

be built as a part of a future contract.

The entire structure is 705 feet long, and includes 10,000 cubic yards of concrete and about 51,000 cubic yards of excavation—representing an overrun because of sliding conditions. The rectangular gate chamber and approach channel are designed to operate under water when the reservoir is filled. A short transition section necks down the rectangular intake opening, and with the aid of pencil-slim draining walls, changes the water to a supercritical flow through the single 14½-foot circular concrete tube. The circular part of the tube consists of eleven 40-foot sections, one 31-foot section, and one 37-foot section. The outlet structure can carry about 11,000 cfs with a reservoir head of 100 feet.

The first 320 feet of the conduit has walls 4 feet thick, heavily reinforced with steel. There is also 80 feet of 3-foot wall, and 120 feet of 2-foot wall. The barrel rests monolithically on a heavy concrete base, and has 2-foot-thick concrete collars to prevent detrimental seepage. When the dam is built sometime in the future, an access gallery will be constructed down into the gate-control chamber, and gate-control piping will also be installed.

Excavation: First Big "If"

The job was originally set up for about 30,000 cubic yards of excavation, which was necessary to cut the hillside down just north of the old county road to Mount Baldy. Most of the contractors who looked at this item took it for granted that the mountainside might require drilling, shooting, and considerable construction trouble. Pioneering conditions at the top of the cut were so impossible that hand labor also seemed necessary.

One contractor, an excavating specialist from Glendale named Robert Watson, had underbid everybody under arrangement with one of the unsuccessful bidders. Nicholas got in touch with Watson, and after satisfying himself that Watson was willing to back up his gamble with a bond, awarded the excavating work to him. It so happened that Watson knew the Los Angeles County road foreman who, 21 years before, had sliced part of that same hill away in making a roadside cut. It had been done without explosives by direct

(Continued on next page)

Do you want to know more about **SLIPFORMS?**

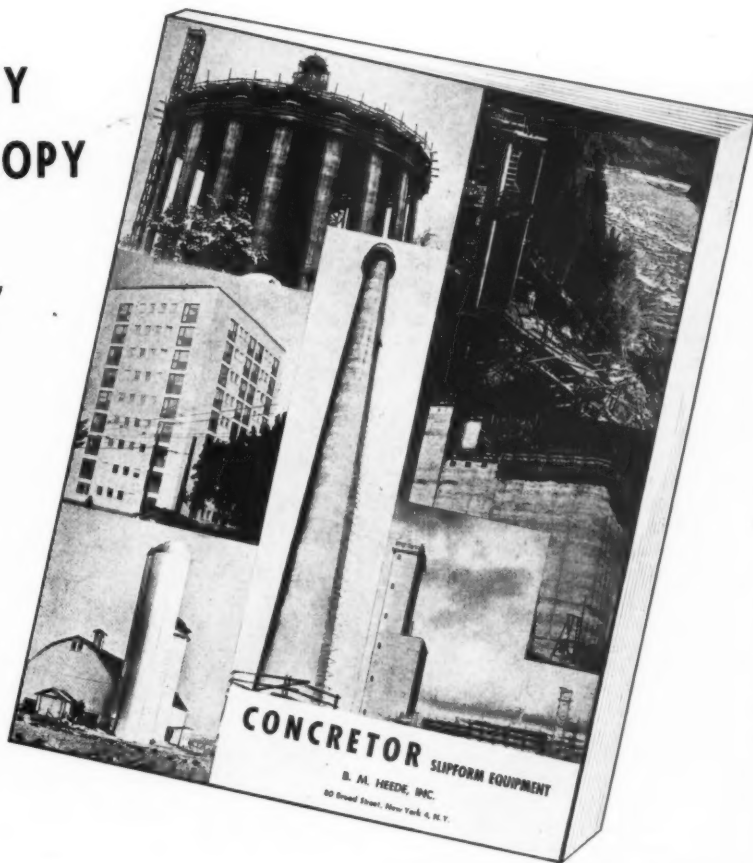
their wide use and extensive application
how they slash days from schedules
and dollars from costs.

**SEND TODAY
FOR YOUR COPY
of this "hot
off the press"
32-page
catalog.**

Our engineering department will be pleased to estimate raising costs for any construction you might have, large or small. Standard slipform machines are available for purchase or lease.

B. M. HEEDE, INC.

80 BROAD STREET
NEW YORK 4, N. Y.



FOR YOUR CONVENIENCE

NAME
COMPANY POSITION
ADDRESS
CITY ZONE STATE

Dam Outlet Built Along Sliding Hillside

(Continued from preceding page)

digging with an old Bucyrus-Erie GA-2 gas-air shovel, so Watson was reasonably sure at least that modern excavating equipment would have no trouble.

The pioneer work was every bit as difficult as it looked, and Watson had to use a labor crew to gouge the first few feet away with picks and shovels. Then a small Oliver tractor with a front-end scoop was moved in, to open up these hand cuts. Later, a Caterpillar D8 with an angle-blade dozer was able to get in and start to work. Fuel had to be brought down by hand, but the machine gouged and bit its way down through decomposed granite, rock pockets, and other tough formations. The first work had been started April 1, 1952, and in only a few weeks an excellent showing had been made.

Trouble came just as soon as the excavation reached a point near the toe of a natural unsupported slide in the face of the hill. Unsupported, and loosened by expansion and contraction, about 15,000 cubic yards sloughed off one night and slid down to cover the site. There was about 5 minutes' warning as the material cracked and loosened, so none of the equipment was caught.

Corps of Engineers designers inspected the abutment, ordered the slide material cleaned up as an extra item, and directed a new slope flattened to 1 to 1 to protect the hill. This extra material was removed. About the same time, a labor strike by the operating engineers' union forced a 9-week shutdown, and the concrete operations were materially delayed as a result.

For much of the earthwork near the bottom of the cut, two LeTourneau FP Carryalls behind D8 Caterpillar tractors were used. The material was hauled about 600 feet to a stockpile, and wasted. When the dam is built, Army Engineers expect to use this material in the construction of an impervious downstream zone.

At the very bottom of the foundation excavation, a small ditch was dug to carry a permanent 18-inch steel water pipe. A private water company nearby has permanent water rights to this amount of water from the San Antonio watershed, and the Corps of Engineers has traditionally respected water rights in planning its structures throughout the west.

Formwork and Concrete

Formwork and concrete methods also reflected to a considerable degree the lack of working space, because the only access to the site consisted of the abandoned county road passing alongside the structure. Formwork and concrete arrangements were geared to the production of about 35 cubic yards an hour in limited space, for pours as big as 528 cubic yards.

A central carpenter yard was set up downstream from the outlet structure in a work area formed by the disposal of excavated material. A power-band saw, a DeWalt cutoff saw, miscellaneous hand-held power saws, and a shaper were used. Layouts were carefully made by experi-

enced men, working under the direction of J. C. Wilson, the carpenter superintendent who built much of the intricate formwork for the Baytown, Texas, butadiene plant. The square-to-round transition section, where every set of ribs called for a different change of radius, was old stuff to Wilson. He built the transition in two sections, and when he dropped them in place with a crane the ends butted perfectly.

The transition section was formed throughout with flooring lumber, nailed to 2 x 4 studs. The approach channel walls were formed inside with flooring lumber and outside with plywood, and the panels were anchored by steel tie bolts. Formwork for the gate structure consisted of plywood facing inside and out, with the outer form used as a slip-form. These forms were made entirely in the central yard, trucked to the site, and set in place by a



P&H crane sets load of steel reinforcing on top of 40-foot timber form.

Ray Day Photo

P&H 655-B crane, equipped with 90 feet of boom. The crane handled

panels of many sizes, and one lift was made involving a gate chamber side form 40 feet long and 21 feet high.

Possibly the most unusual form on the project was the one which molded the round wall of the outlet conduit above the invert line. Since the form would have to be used 13 times, and since it would have to be round, an interesting line of economics was drawn. The best possible compromise seemed to be a strong timber form with a steel skin, built to collapse and move ahead when each pour had been completed and set up.

This form was built to make 40-foot pours. It consisted of a main-carrier framework of twelve 8 x 8 fir uprights capped by 8 x 12 fir timbers, strongly braced. This main framework was designed with twelve sets of double rollers for traveling along 4 x 12 fir skids, during moves. For concrete-placing setups, the

"JOB COMPLETED ...and Texaco



END OF JOB WELL DONE: Partial view of Western Pipe Line Constructors' equipment after ahead-of-schedule completion of 100-mile stretch of pipe laying. Bulldozers,

shovels, ditchers, side booms, speeders, air compressors, drills, trucks—all were lubricated with Texaco, all performed to perfection.

TUNE IN:
Tuesday nights
on television —
the TEXACO STAR THEATER
starring MILTON BERLE.
See newspaper for
time and station.



TEXACO

CONTRACTORS AND ENGINEERS

framework was designed to rest on 22 screw-type jacks, which raised the form to grade.

Hinged wings coming down from the top spring-line point were designed to form the barrel concrete. They were heavily built, and consisted of steel facing against a lumber face, nailed to heavy 3 x 16 curved wales, or studs, set on 16-inch centers. When the form was in place, the wings were held in a stationary position by timber spreaders, and further anchorage was made by timber ties placed between the main strain points of the form. Once it was in and set, it could not move.

The concrete form was also tied at intervals by 18,000-pound Superior coil ties, which passed through the concrete space and prevented the forms from spreading under load.

Above the hinge point, two removable outer-form panels could be inserted and fastened to form the con-

crete after it reached that point. The uppermost portion of the barrel was simply formed by men in the concrete crew who worked with wood floats and a template to finish the concrete off at that point.

Heavy steel reinforcement was called for throughout the conduit, and this material was furnished by Truscon Steel Co. It was placed under another subcontract with the firm of Rutherford & Skoubye, who used Nicholas' P&H 655-B crane to unload the bundles from transport trucks. As soon as the steel was in, the outer conduit form was hoisted into place, the ties were made, and the barrel portion of the section was ready for concrete.

Concreting followed certain well defined schedules. The invert, or foundation, was placed well ahead of the barrel portion. These pours were made in alternate locations, bringing up the fill-ins later. All but

three invert pours had been completed when the first barrel section was placed.

The concrete for inverts and barrel sections alike was batched for Nicholas by Blue Diamond Corp., who set up a small portable Conveyco plant just below the outlet structure near the carpenter yard. Bulk Victor cement from Victorville, Calif., was trucked in, and the sand and aggregates came from Blue Diamond's new commercial plant near El Monte, Calif., a distance of about 30 miles. These materials were trucked to the plant and loaded to the bins by clamshell bucket. Darex air-entraining agent was used to provide about 5 per cent of air entrainment in the mix.

The concrete was batched to give 4,000 pounds of compressive strength at 28 days with a 5.66-sack mix and a placing slump of about 3 inches. Type II cement was used to combat

the alkali-reactive qualities of some of the southern California aggregates, even though the El Monte aggregate deposit is relatively free from this characteristic.

After the batches were proportioned at the Conveyco plant, they were dropped into a Koehring tilting mixer, which turned out the mixed concrete to waiting dump trucks. They hauled it in Gar-Bro transfer buckets, in 1½-yard batches that were hoisted or dropped to the pouring point by the P&H crane. Invert and barrel concrete alike was handled by this crane, and the fresh material was consolidated by Maginniss high-frequency vibrators. Even though the conduit forms were narrow, there was room for men to work inside with the vibrators. By starting these pours with the top open between hinge points, the concrete could be placed through elephant trunks with plenty of room to spare.

All concrete was cured by the continuous application of a water spray for 14 days. The conduit pours were so arranged that one of the sections could be finished each week, working a single 8-hour shift with little overtime. The project was scheduled for completion in late January, 1953, and plans were well under way to bring the dam and spillway under construction possibly during the 1953 working season.

Due to the tragic and untimely death of Contractor K. B. Nicholas, the San Antonio job will be the last one for the company. The estate plans to liquidate as soon as the project is finished, and until that day comes, Nicholas' own high standards of construction continue to govern the work. In fact Nicholas Co. just recently received a commendation from the Corps of Engineers for fine work on another contract.

Personnel

Nicholas' operations are under the direction of General Superintendent F. C. Crowley, who is assisted by Project Engineer N. J. Witt and Carpenter Superintendent J. C. Wilson. Corps of Engineers operations at field level are now being directed by Resident Engineer C. S. Maxwell, who reports to Construction Division Chief W. J. Leen. Col. W. R. Shuler is District Engineer for the Corps of Engineers of the Los Angeles office.

Cable Dump Trailers

Cable-dump trailers with payloads of 27,000 to 200,000 pounds are shown in literature from the Schonrock Equipment Mfg. Co., P. O. Box 1543, San Angelo, Texas. Single-axle units come in 6 to 12-yard sizes with other sizes available upon request. Tandem-axle trailers are made with 12 to 20-yard capacities.

The manufacturer points out that use of winch and cable instead of a hydraulic mechanism reduces tare weight.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 779.

Help save a life by ordering a \$10 CARE food package for delivery to a needy person overseas. Send a contribution, in any amount, to CARE, 20 Broad St., New York 5, N. Y.

AHEAD OF SCHEDULE helped us to do it"

—says Howard Elliott, Master Mechanic,
Western Pipe Line Constructors, Inc., Austin, Texas

The job was laying approximately 100 miles of 30-inch gas line through rough and hilly country in Kentucky. "To keep on schedule," says Howard Elliott, Master Mechanic, "we just couldn't afford to have any equipment laid up because of lubrication failures—and we didn't have any, thanks to Texaco Products and Lubrication Engineering Service. Every piece of equipment worked perfectly and we finished ahead of schedule with a mighty small bill for maintenance."

Texaco Simplified Lubrication Plan

Everywhere, contractors are getting outstanding results using Texaco Lubricants, Texaco Lubrication Engineering Service and the Texaco Simplified Lubrication Plan. This last enables them to handle all their major lubrication with *only six* Texaco Lubricants—eliminates the confusion that leads to costly lubrication mistakes, saves time and money.

Call in a Texaco Lubrication Engineer.

He will survey your equipment, study your operating problems, and help you set up a Texaco Simplified Lubrication Plan "made to measure" for your requirements.

Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Contraction Joints Sawn At Airfield

Various Factors Influence Time Interval Between Placing Concrete and Cutting Joints in Slabs 6 to 12 Inches Thick

By KARL VOGEL, Project Engineer
Corps of Engineers, U. S. Army

• THE sawing of contraction joints in concrete pavements during the recent construction at the Lockbourne Air Force Base, Columbus, Ohio, was one of the first applications of this method on a large scale in airfield pavement construction. This construction was carried on

during warm and cold weather, and both portland cement and a blend of portland cement and natural cement were used in the concrete mixes. Pavement thicknesses ranged from 6 to 12 inches and all transverse contraction joints were sawed to a depth of one-fourth the thickness of the pavement.

Experience at this project indicates that excellent contraction

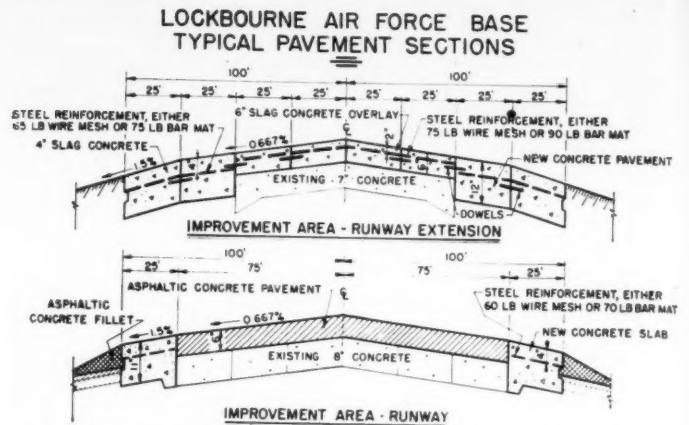


Figure 1. Paving sections through the resurfacing and widening of the existing Northeast-Southwest runway.

joints can be obtained by using properly trained workmen and exercising normal care in choosing the

time for sawing the joints. Weather conditions and the character of the cement used are important factors in influencing the time interval between placing the concrete and cutting the joints. No difficulty is encountered in filling the joints except when jet-fuel-resistant fillers are used. These fillers have a narrow temperature range through which they may be applied, and the joints have to be filled in several stages to compensate for shrinkage of the material as it cools.

It is too early to evaluate the actual performance of the sawed joints in use, and the following remarks are limited mainly to the experience gained and observations made in sawing and filling sawed joints. From these observations the advantages of the sawed joints are that they provide a better surface for traffic, avoid damage due to manipulation of the concrete at the joint during hardening, permit a better sequence of operation during construction, permit earlier application of curing compounds, reduce the quantity of joint fillers required, and present a better appearance in the finished surface.

New Procedure

The problem of providing satisfactory joints in concrete pavements has been with us since the first use of concrete in pavements. The objectionable features of the hand-formed contraction joints, such as the checking, spalling, and deterioration of the concrete at the joints, and the unevenness of the pavement surface in these areas, are well known. Recently a new procedure has been introduced for the construction of joints in pavements. This is the sawing of contraction joints in the pavements after the concrete has hardened.

During the spring of 1951, the Huntington District of the Corps of Engineers initiated a large pavement-construction program for the improvement and expansion of the facilities at the Lockbourne Air Force Base. Soon after the pavement construction was started it became apparent that the joints formed in the plastic concrete were not entirely satisfactory. As a result it was decided to experiment with the use of a concrete saw for cutting joints in the hardened concrete. This operation proved to be very satisfactory, and was continued for the remainder of the pavement construction.

This construction included about

CELLARS... ..STREETS

...OR SEWERS

4-wheel-drive does a job

WRITE

WRITE for full information on any of the "PAYLOADER" models: Four-Wheel-drive HM — 1 1/2 yd. and MR — 1 yd.; Rear-wheel-drive Models HY — 1 1/4 yd., HF — 3/4 yd., HE — 1/2 yd.; Front-wheel-drive Models HAH — 1/2 cu. yd., HA — 12 cu. ft.

Amazing is the word for the variety of work that public works departments and contractors find for their 4-wheel-drive "PAYLOADERS." In fact, the range of uses of these versatile tractor-shovels is limited only by the ingenuity of their owners and operators.

Dig! Load! Backfill! Stockpile! Lift! Carry! Strip! Push! Pull! — all these job capabilities makes them one of the busiest machines on any project — and the most in demand. They drive quickly to work under their own power and they get around the job fast, too — on pavement and ground and over curbs and sidewalks without injuring them.

See one of these powerful, multi-purpose "PAYLOADERS" in action and you'll be amazed at what it can do, too. Your "PAYLOADER" Distributor is ready to give you complete facts. See him today, or write The Frank G. Hough Co., 762 Sunnyside Ave., Libertyville, Illinois.

7 PAYLOADER

THE FRANK G. HOUGH CO. • Since 1920

730,000 square yards of concrete pavement with thicknesses of 6, 11, and 12 inches. Altogether, about 250,000 linear feet of transverse contraction joints were sawed. In addition, grooves were sawed for about 200,000 linear feet of longitudinal construction joints. This article discusses experiences with the sawing of joints in the concrete pavements at the Lockbourne Air Force Base, which was one of the first uses of this method on a large scale for airfield pavement construction.

Extent of the Project

The construction of airfield pavements at Lockbourne included several new concrete aprons and taxiways, and the extension, widening, and resurfacing of the existing northeast-southwest runway. All of the aprons and the taxiways had a concrete thickness of 12 inches, but the northeast-southwest runway had several different pavement sections, as shown in Figures 1 and 2.

Figure 1 shows the pavement sections through the resurfacing and widening of the existing northeast-southwest runway and the existing taxiway at the end of this runway which was included as part of the new runway. The first 1,000 feet at the southwest end of the existing runway and taxiway was overlaid with a 6-inch slab concrete overlay. The widening lanes were 12 inches thick and consisted of a 4-inch slag concrete surface course placed monolithically over 8 inches of regular concrete. The remainder of the existing runway was overlaid with 6 inches of bituminous concrete and the concrete widening lanes in this area were 11 inches thick.

Figure 2 shows the sections through the extension at the northeast end of the runway. The concrete thickness for 1,000 feet at the northeast end was 12 inches, and consisted of 4 inches of slag concrete placed monolithically over 8 inches of regular concrete. The remainder of the runway extension had a concrete thickness of 11 inches.

Except for the concrete overlay portion of the northeast-southwest runway, all of the concrete pavements were constructed in 25-foot wide lanes with dummy groove contraction joints spaced 25 feet apart. The concrete overlay portion of the runway was constructed in 25-foot lanes but was divided into smaller slab units by constructing dummy groove joints to conform with the joint spacing in the original pavement. No expansion joints were included in the pavement lanes.

Wire mesh, weighing from 60 to 75 pounds per 100 square feet, was placed 4 inches below the surface of the concrete runway. The mesh did not extend through the contraction joints, except that, in the outside lanes, it was laid continuously through the joint. The wire mesh was omitted in certain designated areas of the apron paving.

The concrete for the bulk of the construction was made with natural sand and 3-inch maximum-size crushed gravel. Petrographic examinations indicate that the sand and gravel contained limestone in the amounts of 44 and 85 per cent respectively. However, a 1-inch slag aggregate was used in the slag concrete mix for the 6-inch overlay at the southwest end of the runway,

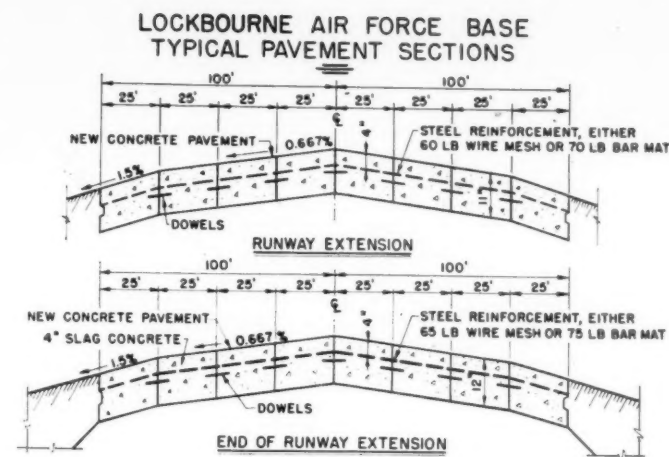


Figure 2. Pavement sections through the extension of the northeast end of the runway.

and for the 4-inch surface course of this concrete, which was placed

monolithically with the regular concrete at both ends of this runway.

Type 1A portland cement was used in about 60 per cent of the concrete, and the remainder contained a blend of 80 per cent of the type 1A portland cement and 20 per cent natural cement. A cement factor of 6.0 bags per cubic yard of concrete was used throughout most of the construction. All of the mixes were air-entrained with an air content of about 4 per cent in the freshly mixed concrete.

The pavement construction was started in May, 1951, and continued through November, 1951. Additional concrete pavements were constructed during the period from May to October, 1952. Weather conditions varied widely during these construction periods and air temperatures during concrete placement ranged from a maximum of about 95 degrees F during the summer months to a low of about 21 degrees F during November, 1951.

(Continued on next page)

BIGGEST NEWS!
IN THE ASPHALT
PAVING INDUSTRY

MADSEN

Announces!

THE NEW
MADSEN MODEL 481

Portable
4000-lb.
BATCH CAPACITY
ASPHALT PLANT

With a background of 39 years in building asphalt plants MADSEN now gives the industry the new MADSEN Model 481... a batch-type plant which we believe excels all others in capacity, desirable features, superior construction and design.

Right from the start, the advantages and flexibility of the MADSEN Model 481 are apparent. It is a portable plant, designed and engineered for faster and easier set-up. Incorporating the famous MADSEN Twin-Shaft Pug Mill Mixer and the patented MADSEN Pressure Injection system together with superior dryer and aggregate bin design, and many other outstanding features... the MADSEN Model 481 gives you that high hourly production that puts more money in your pocket at the end of the job.

Batch-type asphalt plants meet the exacting requirements of today's specifications and the MADSEN Model 481 gives you more desirable features than any other plant of this type. Here are a few of the exclusive MADSEN features:

NEW Sectional Mixer Liners... externally removable (patent applied for).

NEW Triple Discharge Bin Gates... withdraws material from bin uniformly, prevents segregation, fills weigh-box in a level manner (patent applied for).

NEW Roller-Mounted Weigh-Box... rolls out of the way for mixer accessibility.

NEW Portable Design... built-in gooseneck, fifth wheel plate, king pin and rear axle mounting brackets.

NEW 8' 2" Wide... legal width and height crane-erecting box units.

NEW Mixer Operator Station on End of Plant... provides better view... cleaner, out of the way... away from fumes or heat.

NEW Enclosed Gear Box Drive to Pug Mill... V-belt from motor or engine to pulley on gear box with pinion to Pug Mill Mixer.

NEW Individual Motors... on hot elevator, screen, pressure-injection system pump, dust elevator, bin and screw.

NEW All Air Cylinder Operation... on bin gates (4), weigh-box, mixer and asphalt injection control valve. Electrically operated through solenoid 4-way air valves.

NEW Improved Sampling Mechanism... for getting bin samples easier, quicker and more accurately.

NEW Three Sizes of Screens Optional... 42" x 12', 48" x 12' double-deck, or 48" x 14' Symons 2 1/2-deck vibrating screens.

NEW Portable Hot Elevator... which may be hauled in one piece as a trailer or broken down in sections.

NEW Press-broke Steel Columns and Legs... for massive appearance and accessibility without interference.

NEW Accent on Safety... provided by improved guards, platforms and railings for safer maintenance.

Before you buy any asphalt plant... Get the complete story on the new MADSEN Model 481. If your requirements call for a larger or smaller plant capacity MADSEN has a complete line to meet your needs.

MADSEN IRON WORKS, INC.
P. O. BOX 589 • HUNTINGTON PARK, CALIF.

Write today for complete details and specifications on the Model 481 4000-lb. Asphalt Plant.

Equipment that Serves

Contraction Joints Sawed at Airfield

(Continued from preceding page)

All of the concrete was cured with membrane-curing compounds, but additional coverings of Sisalkraft paper and straw were used for cold-weather protection. The influence of the different conditions encountered during this construction on the joint-sawing operation will be discussed later.

Joint Construction

When construction of the pave-

ments was started, the construction joints were formed in the plastic concrete, using a joint machine which cut the fresh concrete and then forced a metal strip into it to form the groove. With the 12-inch pavement which required a 3-inch groove, considerable difficulty was encountered in the forming of the joints. If the joint was formed while the concrete was fairly plastic, it had a tendency to flow together after the bar was removed and during the edging operation. Also, the concrete had a tendency to be depressed in the region of the joint, due to movement of the plastic

concrete. If the joint-sawing operation was delayed, there was considerable disturbance of the concrete when the bar was forced into it, and the concrete had a tendency to be humped at the joint. On this job the difficulties in handforming the joints were aggravated by the use of a 3-inch aggregate in the mix.

Because of the difficulties encountered in forming the dummy groove joints in the plastic concrete, it was decided to experiment with sawing of the joints.

Joint Details

Details of the dummy groove con-

traction joints, and the longitudinal and transverse construction joints for the pavements are shown in Figure 3.

All weakened plane contraction joints were constructed to a depth of one-quarter the thickness of the pavements. For the three pavement thicknesses of 6, 11, and 12 inches, depths of the groove were $1\frac{1}{2}$, $2\frac{3}{4}$, and 3 inches respectively for both formed and sawed joints. The original plan for the formed contraction joints required a beveled groove $\frac{1}{4}$ inch wide at the bottom and $\frac{3}{8}$ inch wide at the top, with the top edge rounded with an edging tool of $\frac{1}{4}$ -inch radius. The sawed joints were carried to the same depth, with a uniform width of cut of about $\frac{1}{8}$ inch to $\frac{3}{16}$ inch.

The original plan for the longitudinal and transverse construction joints required that a groove $\frac{1}{4}$ inch wide and 1 inch deep with rounded top edges be constructed at the top of the joint to permit sealing of the joint. When the contractor changed to the sawing operation, he found it more convenient to saw the groove at the top of the construction joint instead of forming it during construction of the lanes.

All joints were sawed to the full required depth in one cut, and the time required for sawing a joint 3 inches deep and 25 feet long was about 6 minutes. It has been the contractor's experience on this project to saw about 4,000 inch-feet per blade.

Sawing Equipment

The concrete saw consists of a compact power unit which drives a spindle upon which is mounted a thin circular segmented diamond abrasive wheel, and the entire assembly is mounted on four rubber-tired wheels balanced so that it can be moved from one location to another quite easily. The type of concrete saw used on this project was powered with a 13-hp air-cooled 2-cylinder gasoline engine connected to the saw mandrel with a 4-V-belt drive. A floating 3-point suspension automatically protects the blade from binding. Other notable features are positive screw feed for cutting depth control, water-spray system for cooling the blade, front and rear pointers to guide the machine in a straight line, blade guards and solid nonsway wheels. Total weight of the machine is approximately 500 pounds. It is equipped with a water-supply tank, but for a large-scale sawing it is necessary to supply the water from a tank wagon through a flexible hose. Figures 4 and 5 show views of the sawing equipment used on this project.

The saw blade is a segmented wheel 12 inches in diameter and approximately $\frac{1}{8}$ inch thick. The blade has a specially treated steel center with a bonded rim of sintered metals and diamonds which combine to provide smooth, fast, economical sawing.

Sawing Procedures

The sawing of transverse contraction joints at Lockbourne Air Force Base was started as an experiment, and little information was available regarding procedure or proper time, and sequence for sawing the joints. It was reasonable to believe that a definite time existed when this saw-



Powered right for fast loading

Lugano Bros., Inc., of Belleville, N. J., depend on Cat* Diesel Engines in their shovels. This Lorain with a $1\frac{3}{4}$ -yard bucket is powered by a husky Caterpillar D13000 Engine. Loading fill for road construction in Caldwell, N. J., the shovel puts 10 yards of earth in each truck in less than two minutes.

On this job the truck schedules are irregular because of a five-mile haul, but the shovel is able to average 1,800 to 2,300 yards in a nine-hour day.

One reason why contractors choose Caterpillar power for their excavating machinery is simple, dependable, economical operation. Cat Engines use No. 2 furnace oil without fouling. Twelve sizes of engines and electric sets, producing up to 500 HP or 315 KW,

are available. Leading equipment manufacturers can supply these money-saving power units in the machines they build, and your Caterpillar Dealer can furnish them for replacement power. His reliable service and genuine parts stock add to their long, trouble-free work life. Let him prove their dollars-and-cents advantages on your own jobs.

Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—©

**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**

ing should be done, but just how soon the concrete could be sawed and how much latitude in time could be allowed was not known. The problem was to delay sawing until the concrete was hardened to a stage where no damage would be done to the surface, yet complete the sawing before voluntary cracking of the slag would occur. It was decided to saw at 500-foot intervals as soon as the setting characteristics of the concrete would permit, then to saw at 25-foot centers, all in the order in which the concrete was placed. With this sawing sequence a few voluntary cracks occurred, and it was apparent that it would be necessary to modify the procedure. It was then assumed that setting of the concrete to a stage which would permit satisfactory sawing would progress at the same rate as the placing and finishing, and the procedure was changed to require sawing of the contraction joints at the specified 25-foot intervals progressively as the concrete attained the proper hardness. This procedure was followed throughout the remainder of the pavement construction with satisfactory results.

As soon as the concrete has hardened to the sawing stage a chalk line is struck across the pavement at the desired intervals. The pavement is wetted down with water to protect the curing membrane from abrasion. The sawing machine is set with the pointers on the chalk line at one side of the paved lane. For intermediate lanes between existing concrete, the sawing is completed in a single operation from one side of the lane to the other. However, where the lane is paved between forms, the cut is made to the opposite side, stopping just short of the steel form. The machine is then reversed and the short section that was under the machine in its starting position is sawed. The uncut triangular sections adjacent to the forms are cut through when sawing the intermediate lanes. Mechanical guides were given a trial test for straight-line sawing but the idea was discarded as being cumbersome.

With respect to the longitudinal construction joints, the sawing time was not important as the joint already extended completely through the pavement section. The sawing was done only to provide a groove for holding the joint-sealing material. For these joints the top edges of the concrete were rounded as required during the finishing operations, and the sawing of the groove was completed at the convenience of the contractor.

Conditions Affecting Schedule

It has been the experience at this project that no definite time factor can be applied between the placing of concrete and sawing contraction joints but that the time of sawing must be determined experimentally to meet varying conditions. It appears that major factors controlling the time element are: weather and temperature, quantity of cement per cubic yard, and type of concrete.

Insofar as weather is concerned, time of day, season, temperature, temperature change, humidity, wind velocity, sunlight, all have an influence on the time interval between placement of the concrete and sawing of the joints, as well as on the

LOCKBOURNE AIR FORCE BASE TYPICAL JOINT DETAILS

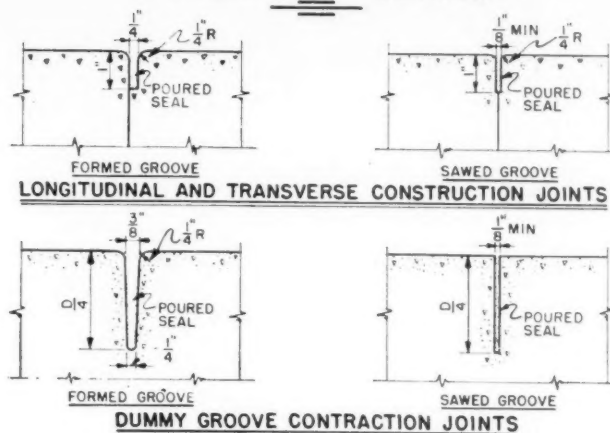


Figure 3. Detail showing dummy groove contraction joints and the longitudinal and transverse construction joints for pavements.

period during which the joint sawing has to be completed. Most of the concrete was placed during the summer months, when the weather was generally hot, dry, and windy. The air temperatures ranged from about 65 to 75 degrees F at night and up to about 95 degrees F during the daytime. Concrete placed in the morning generally could be sawed within 6 to 8 hours on hot windy days. However, concrete placed after sundown on the night shift during the same period could be sawed about 12 hours later on the following day. A small amount of concrete was placed in November with air temperatures varying from 21 to 38 degrees F. It was necessary to cover this concrete immediately after placement, and sawing of the joints was accomplished approximately 3 days later. This concrete has been observed for a period of

(Continued on next page)

Construction superintendent reports:

"Decided savings" on big Duraplastic* job

On this continuous pour job, Superintendent Phil North found that Duraplastic's outstanding uniformity and plasticity permitted moving the forms "at even speed . . . and quicker." That's why he says it resulted in "decided savings for us."

His experience is typical. When you use Duraplastic air-entraining portland cement, less mixing water is required for a given slump. It makes concrete more plastic, more cohesive, more uniform. And the increased plasticity aids proper placement with improved surface appearance.

Moreover, the finished concrete is fortified against effects of freezing-thawing weather, since Duraplastic minimizes water gain and segregation.

COSTS NO MORE

Yet there's no extra price on this extra performance. Duraplastic sells at the same price as regular cement! Complies fully with ASTM and Federal Specifications. Write for free descriptive booklet. Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

To build this half-million-bushel elevator at Lima, Ohio, Felts & Jack Construction Company, Ft. Wayne, Ind., used 28,400 bags of Duraplastic. They find it improves surface appearance, helps cut costs.

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

ATLAS®

DURAPLASTIC
AIR-ENTRAINING PORTLAND CEMENT



Makes Better Concrete at No Extra Cost

THE THEATRE GUILD ON THE AIR — Sponsored by U. S. Steel Subsidiaries — Sunday Evenings — NBC Network

Contraction Joints Sawed at Airfield

(Continued from preceding page)

12 months during which the air temperature has ranged from minus 14 degrees F to 95 degrees F, but no uncontrolled cracking has been found.

During the peak of the 1951 construction season when a cement shortage occurred, the contractor substituted a blend of 20 per cent natural and 80 per cent portland cement for the portland cement used in the concrete. The use of natural cement retarded the setting time somewhat and together with the advance of cooler weather, the period of time between placing concrete and sawing joints greatly increased. As an example, concrete that was placed at 2 p. m. on 28 September, 1951, when the maximum temperature was 58 degrees F could not be sawed until 24 hours later. The temperature during the night dropped to 37 degrees F and rose to 60 degrees F the next day.

Other factors, such as cement content, water content, and consistency, influence the hardening and strength gain of the concrete, which in turn affects the time interval before joints can be sawed. However, these factors generally do not vary appreciably after the conditions are established for the construction, and their effects generally do not have to be considered in the day-to-day sawing operation.

The experience with these conditions indicated that no definite time interval between the placing of the concrete and the sawing of the contraction joints can be set which would be satisfactory for all conditions liable to be encountered on any project. However, it was found that the time for cutting the joints is not critical, and that the proper time can be determined in the field through experience with the sawing operation in much the same manner as a cement finisher is able to determine when concrete is ready to be finished. Sawing too early produces a groove with ragged edges, due to disturbance of the aggregate. The saw blade also tends to accumulate a coating of fine particles which causes binding of the blade, reduces the speed of the saw and slows down the cutting process. On the other hand, there is no harm in delaying the sawing so long as random cracking of the concrete does not occur. One rule that is of prime importance in the successful sawing of joints is to be ready to saw when the concrete is ready, not when it is convenient for the operator. An extra saw should be available as a standby unit for use in case of a breakdown of the sawing equipment.

Joint Filling

The forming of controlled cracks or joints in the pavements necessitates the filling of the groove to prevent the movement of moisture through the joint. It has been shown in Figure 3 that the contraction joint groove which had a top width of $\frac{3}{8}$ inch and a bottom width of $\frac{1}{4}$ inch when formed in the plastic concrete, was reduced to approximately $\frac{1}{8}$ -inch uniform width when the joints were sawed. Although this was favorable in that it reduced the



Figure 4. Side view of the concrete saw in operation. The hose line is connected to a water wagon.

quantity of filler required, some difficulty was encountered in filling the

sawed joints with some of the fillers used.

The sawed joints were thoroughly cleaned prior to pouring the sealing compound to remove loose material which might interfere with its bond to the concrete. A worn saw blade of the type used in making the initial cut was passed through the sawed joint to loosen any foreign material. This was done with the regular sawing equipment, but without the use of water which was required for the original cut. A power-driven wire brush was then used to remove all traces of curing material and accumulated material adjacent to the joint. Finally, a high-pressure air jet was used to remove all loose material in the groove and at the surface near the joint.

Joint-sealing materials conforming with Federal Specification SS-F-336a were required for this project, and furthermore, for certain areas the filler was required to be jet-fuel-resistant. No great difficulty

SPEED UP YOUR



ACROW SHORES Set in Seconds

ACROWS are truly one-man shores. One man can set an ACROW Shore accurately in a matter of seconds by following three simple steps:

- 1) Lift inner tube to approximate height desired...
- 2) Insert steel pin in nearest hole...
- 3) Turn collar handle for final adjustment to the smallest fraction of an inch.

Stripping goes faster, too—just a twist of the collar handle and ACROWS are down... ready to telescope compactly for easy transport to the next job or for space-saving storage.

ACROWS give you 100% salvage—they can be used on all construction jobs with their complete range of four sizes. Use them over and over again—ACROWS all-steel construction is practically indestructible.

Over 1,000,000 Acrow Shores in Use!



UNITED STATES OFFICES

Chicago • Michigan 2-1010	Houston • Underwood 8914
New York • Lexington 2-7995	Dallas • Riverside 6081
Boston • Devonshire 8-7174	Birmingham • 7-5151
Philadelphia • Locust 7-5583	Los Angeles • Lomite 2889
Atlanta • Emerson 3716	San Francisco • ATwater 3-1000

CONTRACTORS AND ENGINEERS

was encountered in filling the sawed contraction joints when the regular hot-poured sealer was used, but considerable difficulty was encountered in filling these joints with hot-poured jet-fuel-resistant materials. The difference is that the JFR materials are poured at a higher temperature and have a more limited temperature range through which they are usable. When filling the sawed joint which in most instances presented a narrow square-edged opening 3 inches deep, the thin stream JFR material cooled so rapidly that difficulty was encountered in completely filling the joints. Also, the JFR materials showed high shrinkage on cooling and it was necessary to make three or four passes with the sealer applicator in order to fill the joint. The hand-formed joints, which had a wider groove with rounded edges, could be filled more readily.

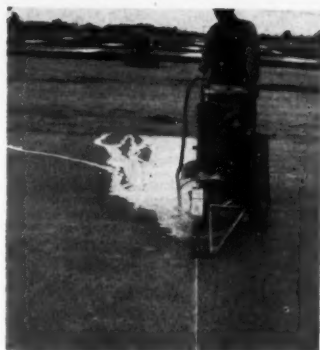


Figure 5. Front view of the concrete saw in operation. The chalk line is used as a guide in obtaining a straight cut.

In the sealing operation, the joint-sealing materials were first heated in a power-agitated melting kettle and then transferred to an oil-jacketed applicator which maintained the material at the proper tempera-

ture during filling of the joints. This is a double-boiler push-type unit which maintains the proper temperature of the joint material by means of an oil-heated bath surrounding the 20-gallon inner tank.

Advantage of Sawed Joints

So definite was the improvement in efficiency of sawing joints during the experimental program that this method was continued for the remainder of the 1951 and 1952 paving program, and it is contemplated that it will be used on all future paving work on this project. A few random cracks have been observed, most of which occurred at the start of the sawing operation. Most of the cracks are in the area of the planned joint. In several instances the cracks were observed when the operator prepared to saw the joints, and no sawing was done. It is believed that all cracks in the region of the sawed

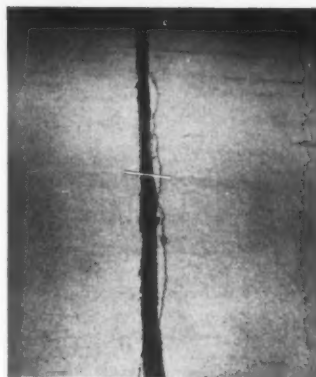


Figure 6. An example of a transverse crack which occurred before the joint was sawed.

joints occurred before the joint was sawed but the crack was too small to be observed. Figure 6 shows a typical crack of this type. In most instances the cracking started opposite a joint in the adjacent lane. Omission of wire mesh in certain areas did not affect sawing time and no uncontrolled cracking has been noted in those areas.

The hand-forming of joints tends to damage the concrete in that area, due to over-manipulation and disturbance of the concrete after it is partially set. An example of severe scaling was found in the original concrete pavements at the Lockbourne Air Force Base, which were built about 10 years ago under pressure of wartime construction. While this scaling variously has been attributed to bad aggregate, overfinishing, vibrating screeds, and wet mixes, it generally originated at the hand-formed joints and progressed toward the center of the blocks, with the greatest depth of scaling at the joints. This is a strong indication that concrete deterioration is likely to originate at the joints and be most severe in this area. The sawing of the joints avoids the manipulation and distribution of the concrete during its initial hardening period, which often contributes to the deterioration of the concrete at the joints.

The difficulties in obtaining a smooth surface when the joint is formed in the concrete have been discussed previously. On the other hand, the surface at the sawed joint is as true as the general concrete surface. It is perfectly obvious that the sawed joint will provide a better riding surface. Also, the appearance of the sawed joints which are of uni-

(Concluded on next page)



Figure 7. A closeup view of a transverse joint in an area where the change is made from sawed to formed joint.

CONSTRUCTION

with

ACROW

ADJUSTABLE STEEL SHORES



ACROW Steel Shores are engineered and built from base to head for the fastest, safest, securest support on the job. Completely positive simple action leaves no chance for slippage. There is no cutting, wedging, or nailing to eat up time and money. And ACROW Shores have no jacks, levers, or supplementary tools to lose.

EXCLUSIVE ACROW SELF-CLEANING FEATURE makes possible rapid stripping operations. A unique patented extension of the collar nut extends over a segment of the threaded tube (see left). When collar handle is turned in stripping operation, encrusted concrete, dirt, and grit are removed from the thread—making ACROWS instantly ready for use on the next job.

GENERAL SPECIFICATIONS

Shore Sizes, Dimensions, Weights, and Capacities							
Size No.	Height		Weight in lbs.	Failing Load		Recommended Safe Working Load	
	Fully Closed	Fully Extended		Fully Closed	Fully Extended	Fully Closed	Fully Extended
1	5 ft. 7 in.	9 ft. 10 in.	46	10.96 tons	8.97 tons	8210 lbs.	6720 lbs.
2	6 ft. 7 in.	10 ft. 10 in.	49	10.50 tons	7.90 tons	7840 lbs.	5975 lbs.
3	8 ft. 2½ in.	12 ft. 5½ in.	56	10 15 tons	7.55 tons	7490 lbs.	5600 lbs.
4	11 ft. 0 in.	15 ft. 0 in.	69	7.27 tons	2.89 tons	5225 lbs.	2050 lbs.

Standard 6" x 6" Beam Type 14" x 4" J Head 14" x 4" *
*J Head available as an insert or standard head.

Write for Free Information on Acrow Products

ASSOCIATE COMPANIES

Acrow (Canada) Ltd., Montreal
Acrow Venezuela, S. A., Caracas
Acrow Brazil, S. A., Rio de Janeiro
Acrow Uruguay, S. A., Montevideo
Acrow Argentina, S. A., Buenos Aires
Acrow Peru, S. A. (Ingenieros), Lima
Acrow (Engineers) Ltd., London
Acrow Engineers (Pty.) Ltd., Johannesburg
Acrow (Pty.) Ltd., Sydney

ACROW, INC. Dept. CE-4

510 N. Dearborn St., Chicago 10, Illinois
Gentlemen: Please send me the following
Free Bulletins (Please Check)

- ☐ Acrow Shores ☐ Trench Jacks
☐ Column Clamps ☐ Telescopic Floor Joists

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

Contraction Joints Sawed at Airfield

(Continued from preceding page)

form width and depth is greatly improved over that obtained by forming the joint. This comparison is shown in Figure 7. This is a closeup of the two types of joints.

It is still too early to evaluate the actual performance of the sawed joints in use; however, there are some areas where vehicular traffic has been exceedingly heavy. Under this traffic the sawed joints show no clipping or spalling. Very little usage has been made of the pavement in the area of the hand-formed joints. Neither has there been sufficient time for the elements to create noticeable damage. However, close observation of the hand-formed joints in some cases indicates considerable hair cracking at the surface adjacent to these joints. This is generally the first step in any deterioration due to weathering.

Costs

There are no figures available at present which might reflect an accurate cost relationship between sawed and hand-formed joints. The factors affecting cost vary from one project to another, and even on the same project. It is safe to assume that the cost of sawing will be somewhat higher than forming the joint by hand. Preliminary figures compiled

indicate that sawing alone will cost about 7 cents per inch-foot. The savings in the quantity of joint sealer in sawed joints as compared with the amount required for filling of hand-formed joints will reduce the total cost per foot of joint sawed and sealed.

In spite of the apparent adverse cost comparison for the sawed joints, the contractor preferred to continue the sawing of the joints on additional paving work awarded after this construction was in progress.

Summary and Conclusions

The experiences at the Lockbourne project have demonstrated that excellent sawed joints can be obtained by using properly trained workmen, and exercising normal care in selecting the proper time for sawing the joints. The sawing time is influenced by many factors related to the materials and mix characteristics of the concrete, as well as by external temperature and weather conditions. However, the time limit is not critical and the proper sawing time can be selected without difficulty.

Based on the field observations the sawed joints are considered to have many advantages over the conventional formed joints, some of which are:

- They are more uniform and have a better appearance.
- They provide a smoother surface for traffic.

- They avoid damage due to manipulation of the concrete during hardening.
- They permit a better sequence of operation during construction.
- They permit earlier application of curing compound, and earlier protection of the concrete during cold weather.
- They reduce the quantity of joint filler required.

Against these benefits there is an apparent slight increase in cost for the sawed joints. Also, some difficulty was encountered in sealing the sawed joints with hot-poured fillers which are resistant to jet fuel. The normal rubber-asphalt types of joint filler offered no problem in sealing of sawed joints.

Although it is too early to evaluate the performance of the sawed joints in use, their present condition indicates that their performance has been satisfactory.

Personnel

The pavement construction at the Lockbourne Air Force Base was performed under the supervision of the Huntington District Office, Corps of Engineers, U. S. Army. The contractor for this work was the W. L. Johnson Co. of Columbus, Ohio, to whom much credit is due for the success of the joint-sawing work.

The writer wishes to express his appreciation to the personnel of the

Ohio River Division Laboratories, Corps of Engineers, and particularly to Mr. I. Narrow of these Laboratories for his assistance in the preparation of this article.

The foregoing article is from a paper presented by Mr. Vogel at the last meeting of the Highway Research Board in Washington, D. C. (See also CONTRACTORS AND ENGINEERS, January, 1952, page 54.)

Tractor Grease Seals

A new grease seal for Caterpillar D4, D6, D7, D8, and International TD-24 tractors has been announced by Sure-Seal Equipment Co., Portland, Oreg. Two neoprene rubber seals are used in place of the usual



single seal. Solid cast-metal sides that have no holes or notches prevent lubricating grease inserted under pressure from puncturing the rubber seal.

Final drive bellows seals for D7 and D8 tractors are also available.

For further information write to the company, or use the Request Card at page 18. Circle No. 797.





**McKISSICK
CONSTRUCTION
BLOCKS**

**ARE INVALUABLE TO
CONSTRUCTION MEN WHO
SPECIFY EFFICIENCY.**

**All steel construction.
Bronze bushings or HY-
LOAD roller bearings for
medium or high speeds.
Extra long center pins.
GUARANTEED to carry
rated loads for the life of
the block.**

**A BETTER BLOCK
FOR EVERY PURPOSE**

McKISSICK

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

Patch

ROADS THE LOW COST WAY

Temperature
Easily
Controlled

•

Easy to Transport

•

Saves Money
on Patchwork





**OTHER PRODUCTS OF
STANDARD STEEL**

Asphalt Pressure Distributors,
Maintenance Distributors, Patch
Rollers, Supply Tanks, Tool
Heaters, Asphalt Tools, Street
Flushers, Construction Brooms.

**STANDARD STEEL
TAR-KETTLES**

**PATCH AND MOVE ON IN
MINUTES AND SECONDS**

With this Standard Steel Model "S" Kettle, "cold spots" or "burnt materials" are eliminated. You get uniformity of heat throughout the entire mass of material. Steady temperature at the correct level is maintained all day long. Easily transported—equipped with special safety features—it's a fast worker. With a motor spray attachment, it is even more efficient for road maintenance. Standard Steel also offers a complete line of crack filling pots, shoulder rollers and other road maintenance equipment.

WRITE FOR CATALOG AND PRICES

Standard Steel Works NORTH KANSAS CITY, MO.

Built to **Standard** *The Highest*

Steel Scaffolding For Concrete Shoring

Sectional steel scaffolding, scaffolding I-beams, and plywood panels teamed up recently to provide a new concrete-shoring technique. During construction of cabanas at the Blue Horizon Hotel, Miami Beach, Fla., this technique speeded the job considerably and permitted the contractor to complete the job in time for the 1952-53 vacation season.

Under the new system, most of the carpentry work and wood framing operations are eliminated by the use of I-beams set directly on top of the scaffolding frames. Then plywood panels are laid on the I-beams without fastening of any kind. This technique not only eliminates framing operations but also ends stripping costs.

On the Miami Beach job, Trouble-Saver sectional shoring, supplied by the Patent Scaffolding Co., was used. Patent also supplied the I-beams which were used instead of 2 x 6 lumber.

For further information write to the Patent Scaffolding Co., Inc., 38-21 12th St., L. I. C. 1, N. Y., or use the Request Card at page 18. Circle No. 823.

Entrained-Air Meter

A meter for measuring entrained air in samples of concrete is made by the Techkote Co., Inc., 820 W. Manchester Ave., Inglewood 1, Calif. The White air meter consists of a 2-piece clamping device with an inspector's test gage set in a flexible rubber mounting. The device, which has a 0.250-cubic-foot capacity, seals with 4 toggle clamps. The meter weighs 12 pounds alone and 19 pounds including case and accessories.

The device may be used as a pycnometer for the determination of specific gravities and the free moisture content of aggregates.

For further information write to the company, or use the Request Card at page 18. Circle No. 842.

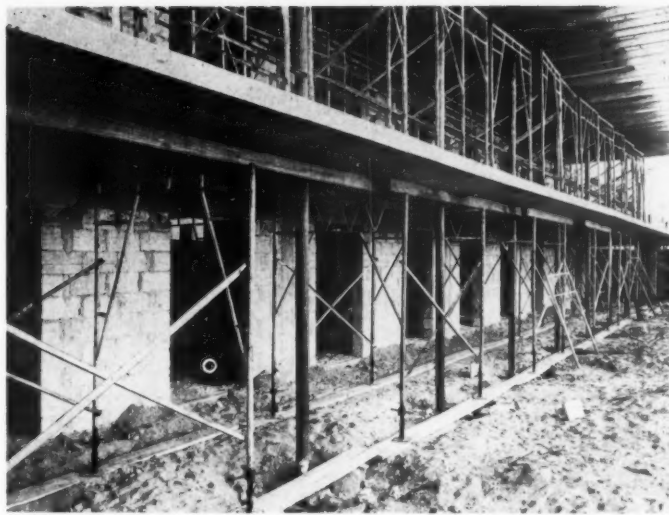
Drainage Specification Aid

A bulletin to assist engineers in preparing specifications on plain-end perforated clay pipe for turnpike, highway, and road projects is available from Bowerston Shale Co., Bowerston, Ohio. It contains excerpts from various state specifications.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 766.

SASGEN

New
Electric-Powered
CHAMPION
DERRICK



Patent scaffolding frames used in a new concrete-shoring technique for the construction of cabanas at the Blue Horizon Hotel, Miami Beach, Fla.

Bulldozer Line Described

A 36-page catalog on its line of bulldozers and their attachments has been published by Caterpillar Tractor Co., Peoria 8, Ill. The catalog contains model views showing every size and style of bulldozer made by the company, and cutaway views illustrate their features. Brief specifications are printed with each model, and two pages in the back of the book are devoted to detailed specifications of all bulldozers made for both track-type and wheel-type tractors.

Hydraulic and cable controls of the dozers are also discussed. Attachments, such as the brush, root and rock rakes, the treedozer, and the stumper, manufactured by Fleco for Caterpillar, are described.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 753.

MAKE NO MISTAKE . . . Jaeger gives you most air per dollar any way you figure

1. Compare your purchase cost: In every case, the price of your "new standard" Jaeger Compressor is lower than those asked even for out-dated "old standard" machines.

2. Compare your cost per cubic foot of air: Your "new standard" Jaeger, although it costs you less to buy, delivers 15% to 25% more cubic feet

of air per minute, at full 100 lb. pressure.

3. Compare your job costs: 15% to 25% more air means 90 to 100 lbs. pressure behind a full set of air tools instead of mere 70 lbs. pressure. This full pressure greatly increases their speed and impact, *actually produces 30% to 40% more work with the same men and tools.*



Model 75:—First compressor to run a heavy duty breaker efficiently.

Model 125:—First compressor to run 2 heavy duty breakers or one heavy rock drill efficiently.

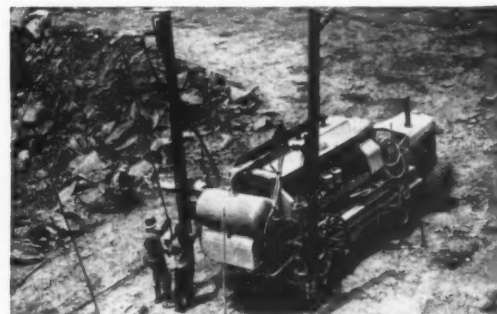


Model 365:—First to run a 4" wagon drill with air to spare for plug hole drilling, or large Ka-Mo earth drill efficiently.



Model 185:—First to run 3 heavy duty breakers efficiently.

Model 250:—First compressor to run 3 1/2" wagon drill, 2 heavy rock drills or 4 heavy breakers efficiently.



Model 600:—First to run 2 heavy wagon drills or a big 9B-3 pile hammer efficiently. First "new standard" copied by the industry.

No other compressor, at any price, gives you these "air plus" features

- Balanced 2-stage, W-type compressor unit standard in every size from 75 to 600 ft. Cooler and smoother running than any V-type.
- 75% to 100% larger valves for free air flow, and up to 10 times longer valve life.
- Larger intercoolers and air receivers to cool and handle 15% to 25% more air.
- Relief valve for automatic drainage to insure drier, cleaner air, standard on all models.

- Positive lubrication by gear driven oil pump with flooded suction, standard on all models.
- Automatic "Fuel Miser" is standard on all Jaeger models where the automatic control of engine speeds effects worthwhile fuel savings.
- Bigger multiplate clutches than other compressors and bigger engines operating at conservative speeds.

For full details about compressors, tools and their air requirements ask your Jaeger distributor or send for Catalog JC-1.

THE JAEGER MACHINE COMPANY

701 Dublin Ave., Columbus 16, Ohio

AGGREGATE SPREADERS • CONCRETE SPREADERS AND FINISHERS • CONCRETE MIXERS • TRUCK MIXERS • PUMPS

Heavy-Duty Trailer

A new heavy-duty trailer with a payload capacity of 27 tons has been added to the line of the Martin Machine Co., Kewanee, Ill. The Model R4TL trailer, which weighs less than 8,000 pounds, was designed to haul equipment in the Caterpillar D8 weight class and still remain within legal axle-load limits in most states. Alloy-steel construction has reduced dead weight. The frame, fabricated of structural members, is electrically welded. The trailer has an 8 x 13-foot platform, with an over-all length of 27 feet 7 inches.

For further information write to the company, or use the Request Card at page 18. Circle No. 706.

Bulletin on Screen Cloths

Screen cloth for scalping, sizing, or dewatering operations is shown in literature from Hewitt-Robins Inc., 666 Glenbrook Road, Stamford, Conn. A weave with rectangular opening is recommended where the vibrating screen is set at a steep angle. A similar weave, but one woven with heavier wires, is the non-spreader.

In another, the non-blind, the longitudinal wires are smaller in diameter than the transverse wires, which are grouped in clusters of three and lock-crimped. A slight vibration is set up in the greater unsupported length of the longitudinal wires to help eject materials. Other patterns have a square opening with either a double or lock crimp. The flat-top weave has a smooth screening surface.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 859.

HRB Bulletin on Compaction

A new bulletin on compaction has been published by the Highway Research Board. Bulletin 58 is the result of efforts by the Committee on Compaction of Subgrades and Embankments to list practices pertaining to compaction equipment, its selection and uses, and specifications which govern compaction of embankments, subgrade soils, and bases.

The book contains illustrations and charts, together with comprehensive tables. It is available from the Highway Research Board, 2101 Constitution Avenue, Washington 25, D. C., at a charge of \$1.50.

Steel-Roller Drive Chains

Steel-roller drive chains are discussed in a booklet from the Atlas Chain & Mfg. Co., "M" St. below Erie Ave., Philadelphia 24, Pa. The Atlas roller chain consists of a series of alternating pin links and roller links joined together.

The booklet lists formulas and conversion tables for determining the type and size of chain needed for particular power-transmission set-ups. There are also drawings of recommended chain-drive layouts and those not approved. Other sections discuss installation, maintenance, and lubrication.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 847.



The Model R4TL trailer weighs less than 8,000 pounds, but can haul heavy equipment.

Prestressing Textbooks Given to Public Libraries

Martin Mahler, Consulting Engineer of Union, N. J., who specializes in prestressed concrete, recently presented the New York City Public Library and the Buffalo, N. Y., Public Library with a collection of textbooks and literature on the subject of prestressed concrete. It is Mr. Mahler's intention to establish similar technical library collections in all cities with a population of 100,000 or over in the United States, its possessions, and Canada.

To date Mr. Mahler has founded 45 libraries of prestressed-concrete literature.



It's smart business to put ALL YOUR EGGS IN ONE BASKET...

when it's the BLAW-KNOX "Complete Package" of concrete paving equipment

IT'S the most efficient operating policy as well as smart business to put all your eggs in one basket... when those "eggs" represent every piece of concrete paving equipment you need, PLUS all the advantages of a one-source "package" paving system.

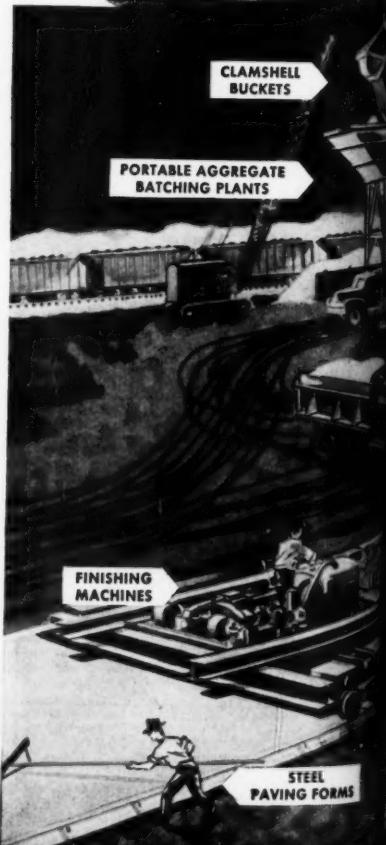
With the Blaw-Knox "Complete Package", every operation is 100% mechanized in a set-up that is engineered for big production at a schedule-trimming pace. You have all the benefits of depending on one, and only one, source... one reliable manufacturer who gladly accepts the responsibility for each piece of equipment functioning efficiently and economically in a balanced operation... and one dependable distributor source which assures you of the prompt, skilled service that keeps you operating at full efficiency at all times. Remember, just one Blaw-Knox trained man can service all your "package" equipment!

When you have the Blaw-Knox "Complete Package", backed by "package" economy advantages, you know you can clip schedule time and still make good profit. Think what that means when you're bidding against stiff competition!

Whether your next job is large or small, it will pay you to check what "Complete Package" efficiency can do for you. Your nearest Blaw-Knox distributor can help you make up a "Complete Package" to fit your job requirements, and explain every detail.

BLAW-KNOX

**BLAW-KNOX
EQUIPMENT DIVISION
BLAW-KNOX COMPANY
2067 Farmers Bank Building
Pittsburgh 22, Pa.**



Building Problems: Dirt Work and Steel

Native Quicksand in Base Joins Man's Steel Strike and Slows Progress on New Life Insurance Building

• QUICKSAND, one of nature's oldest construction problems, joined with the man-made steel strike, a recent construction headache, to make the new Gibraltar Life Insurance

Building in Dallas, Texas, a long-drawn-out piece of construction. Scheduled originally for occupancy in October, 1952, delays in steel deliveries set back the com-

pletion date by a few months. The building was, however, finished in the early part of this year.

Under ordinary conditions, the builder of the 11-story \$2,500,000 structure—J. W. Bateson Co. of Dallas—is one of the best-organized building construction firms in the southwest, and jobs done by this firm have a way of growing rapidly toward the sky. But the presence of quicksand in the Gibraltar Building foundation slowed the job during its initial construction phase, and this was followed by the steel strike, which put off delivery of the structural members which form the skeleton of the structure.

It is not very soul-satisfying to

a superintendent on a \$2,500,000 building to have, as his working force, one carpenter and three laborers. General Superintendent R. C. Sontag of the Bateson Co. reached that low point at least once when the building was half finished.

Beautiful Building, However

In spite of these problems, however, the building is a beauty. In fact, the design calls for future work above the 11-story level to raise the structure 11 more stories, and the heavy steel members in the lower section, which were necessary to hold the future weight, actually helped to create excess steel tonnage over what might normally be expected in an 11-story building. The 30 heavy structural H-beams, reaching toward the sky to form the main skeleton, start off with 16-inch H-beams, with 1½-inch webs and flanges.

From the exterior, the building presents a distinctive shiny appearance, due to aluminum exterior panels and aluminum window sash. Bateson's contract called generally for a building shell only, and as office tenants apply for leases, their space is finished according to their needs. Only a part of the building is occupied by the home offices of Gibraltar Life Insurance Co.

Modern materials were used wherever possible to make the building light, strong, and easy to maintain. The first floor above street level is finished from the top of a concrete slab, but the remaining floors are asphalt or concrete tile set on Robertson Q-type steel decking. Ceilings are of a new metal acoustic snap-in type. Plenty of window space gives the building light, and a well arranged system of fluorescent lights and complete air conditioning should make it a comfortable place to work.

The structural design is conventional, and the steel uprights are designed for riveted connections every 22 feet, or two stories. Cross members reach across from the uprights to form the floor-level outline, and the Robertson decking lies across these members. Even the stairways are steel. The steps and intermediate landings are thin concrete, poured into the steel stairway shell.

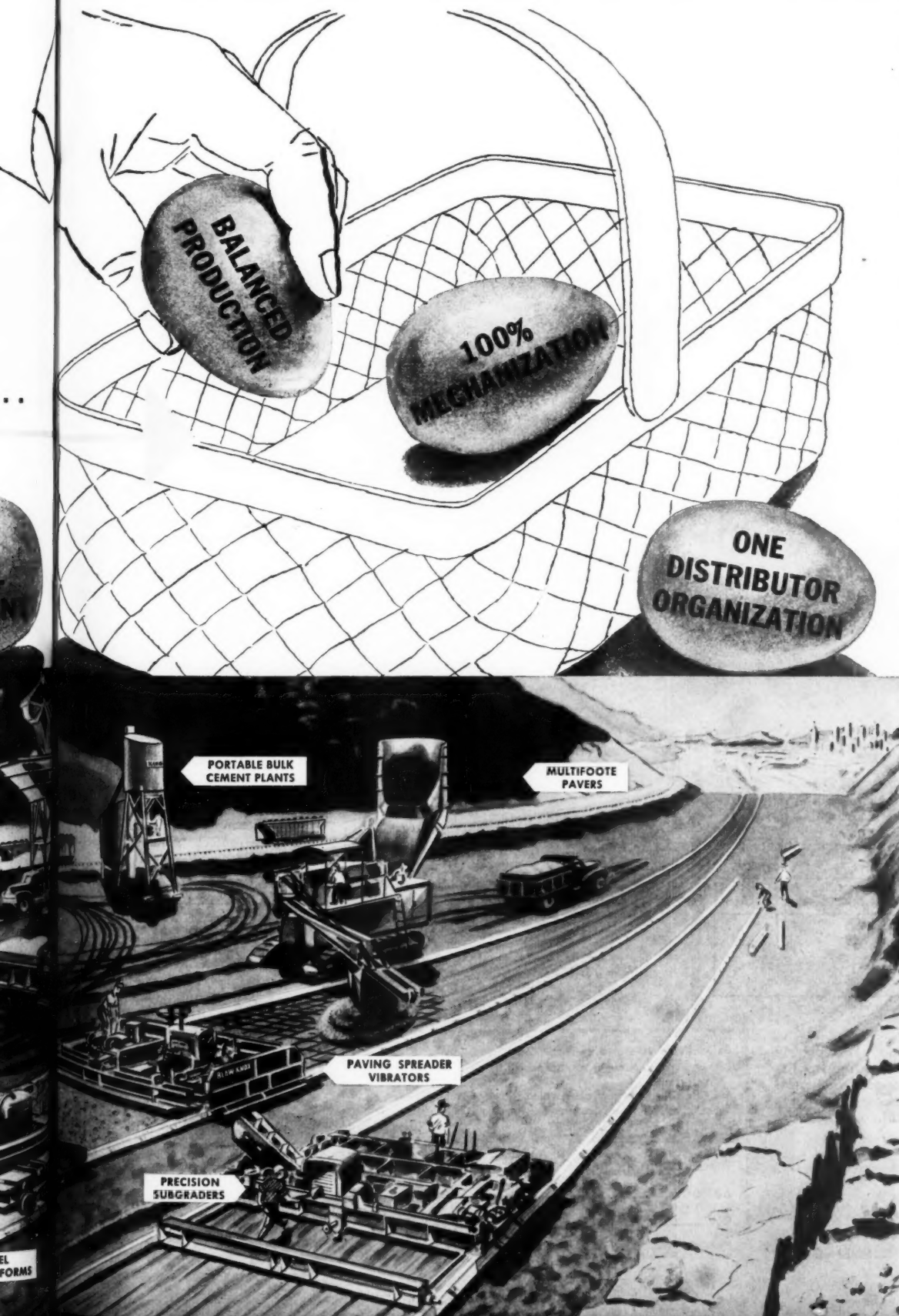
Thomas, Jameson & Merrill, Dallas architectural-engineering firm, made the structural design. Their work was combined with a mechanical design by Landauer & Guerrero.

Principal subcontractors included Vilbig Bros. on excavation; Farwell Plumbing Co. on plumbing, heating, and air conditioning; Storbach & Gregory, on plastering and guniting; Beasley Construction Co. on structural-steel erection; Mosher Steel Co. on steel supply; and Way-Mix Concrete Co. on truck-mixed concrete.

Excavation in Quicksand

The layer of quicksand which Vilbig Bros. hit is a well known Dallas formation, and was figured in the design. To get down to proper grade for the main footings and to make room for the boiler room, it was necessary to dig a hole for the 102-foot 3-inch building (none of the sides are exactly the same) 18 feet below street level.

(Continued on next page)



Building Problems: Dirt Work and Steel

(Continued from preceding page)

The excavation level outside the boiler room was generally 14 feet below street level.

Excavation started with a gentle ramp leading from the northeast corner of the building down into the hole. A Northwest 25 dragline gradually worked the material out, loading it to a fleet of dump trucks of various makes, but all of about 7-cubic-yard capacity. The material was hauled out to west Dallas and enough was stockpiled to haul back in later for backfill. The remainder was wasted.

The heavy ledge of quicksand soon showed up, however, and not only were the excavation operations slowed, but adjacent buildings were put in positions of danger. Two



Hoisting Engineer J. L. Cartwright, from his control position on the Clyde hoist, raises a load of concrete to the third story level. Ray Day Photo

sides of the excavation were protected by driven sheet piles. A Caterpillar D7 with a dozer worked up close to the sheet piles and the other sides of the hole to bring material up to the Northwest. It was a tough laborious job, but it was finally finished so the footings could go in.

The designers had specified cast-in-place concrete piles to reach from the floor grade down to rock, some 40 feet below, so Raymond Concrete Pile Co. was engaged to drive its step-taper piles in these locations. These pile clusters support the load under all the upright structural members.

Structural-Steel Erection

If the steel strike had not so seriously crippled the project, and the nation along with it, the erection of structural steel would have been a rapid interesting example of modern structural erection. The heavy upright members were just long enough to reach two stories, and the cross members were easy to handle.

The Beasley firm moved in a powerful Cummins-driven 3-drum American hoist and a heavy stationary stiffleg derrick to handle the members, and set up a scheme of setting two floors at a time, and jumping the derrick to the new level. The derrick mast was 100 feet long, and the rig had a 112-foot boom. The 3-drum hoist was mounted on the ground floor in the northwest corner of the building, and control cables were rigged through a heavy sheave at that level, so they passed up through the center of the derrick platform.

The derrick base rested on a temporary platform consisting of four 16 x 16-inch fir timbers. The platform was securely anchored at the base by four cable and turnbuckle connections, which reached out to the nearest four upright pieces of structural steel. In addition, five main cable-turnbuckle guy lines reach from the top of the mast to various structural members along the outside lines of the building.

The structural members were trucked in, unloaded, and were then raised as needed. When the steel strike caught the project, only five stories above street level had been raised. There was nothing else to do but move the crew off, leave the equipment where it was, and wait. The wait had lasted over 6 weeks when CONTRACTORS AND ENGINEERS visited the project. Once the steel was set, however, excellent progress was made.

CONTRACTORS SAY:

**Put a
LULL SHOVELoader
on
EVERY JOB!**



for cleaning up bricks, concrete, and other debris.

for digging and loading sand, dirt, gravel, blacktop, cinders, and coal.

for charging hoppers and batchers, for lifting barrels, pipe, structural members, brick, and cement.

for landscaping, leveling, grading, backfilling, dozing.

for loading and moving lumber, masonry blocks, crates, steel, and logs.

for snow plowing, sweeping, scooping, and ice scraping.

On scores of jobs too big for manual labor but too small for heavy equipment, contractors find the versatile Lull Shovel loader really pays off. Keeps the big equipment on the big jobs... gets your small jobs done faster and easier.

There's a Lull Shovel loader to fit your job requirements. (See chart below.)

MODEL	CU. YD. CAPACITY	LIFTING CAPACITY	LIFTING HEIGHT	DOWNCROWD
3B	3/4	1800 lbs.	9'	16"
4A	1 1/2	2500 lbs.	9'11"	23"
4B	3/4	4000 lbs.	9'11"	24"
4C	1	6000 lbs.	11'	26"

Quickly interchangeable attachments include material buckets, coal and snow buckets, material handling forks and cranes, bulldozer blades and sweepers.

LULL SHOVELLOADERS mount exclusively on the dependable Case, Minneapolis-Moline, Oliver and Sheppard industrial wheel tractors. Contact these distributors for complete information or mail the coupon today.

BAKER-LULL Corporation

A Subsidiary of the **BAKER-RAULANG CO.**, Cleveland, Ohio

370 West 90th Street • Minneapolis 20, Minnesota

Baker-Lull Corp.
370 W. 90th St., Minneapolis, Minnesota.

Mail me your 10 page catalog which shows Shovel loader uses, attachments, and complete specifications.

Name _____

Firm _____

Address _____

City _____ Zone _____ State _____

USE RIGHT BUCKET FOR THE JOB



Hayward makes all three—clamshell, electric motor, orange peel. A Hayward recommendation is unbiased.



Trade MARK

THE HAYWARD CO.,
32-36 Day St., New York

Hayward Buckets

CONTRACTORS AND ENGINEERS

Other Work Keeps Pace

From the start, the building had been organized systematically so that structural erection would follow the excavation, and placement of the various materials, plumbing, and electrical fixtures would come after that. The general scheme was followed. That is why everything had to stop with the steel strike.

Concrete work in the building foundation was placed against wood forms, and the first-floor concrete deck was placed by using Dayton snap ties and stirrups to hang the forms from the structural members. Fireproofing up to the second floor consisted of concrete placed in wooden forms, but above that level, guniting was used. The concreting rate was set up for about 20 cubic yards per hour, including fireproofing. Six small CMC buggies were used from the various levels of a main tower, set along the east side of the building, to hoist materials up to the floors. A Waukesha-powered Clyde 3-drum hoist served this tower.

An intercom system was installed to connect the hoisting-engine operator with men at the various floor levels. Safe, sure, and speedy, it was faster and safer than the old method of bell signals.

A DeWalt power saw, on the bottom floor, was the center of carpenter work. Panels were made so they could be used over and over, since much of the beam work and



This view of the new Gibraltar Life Insurance Building in Dallas shows construction about at the halfway point, where it was when the steel strike hit. The derrick on top of the building is being used to raise steel.

Ray Day Photo

fireproofing were typical. The Dayton snap ties were fastened against the forms from below, by means of a rubber-mounted rolling platform.

All men working on the floors below the riveting gang were protected by placing a temporary covering of 3 x 12 fir planks over the

top floor, and installing the Robertson Q-type decking immediately after the rough structural skeleton was in. The stairways also were installed immediately, so that climbing around on ladders and make-shift devices would be eliminated. The job lacked nothing in the way of organizing for safe conditions and systematic construction.

Tenants are now moving into a building at the corner of Harwood and Bryan Streets which is a real addition to the city's skyline.

Coated Work Glove

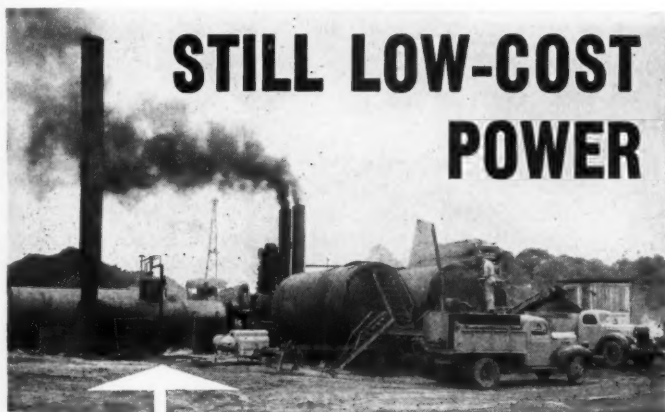
Literature is available on a coated work glove made by the Arcadia Mfg. Co., Birmingham, Mich. According to the manufacturer the glove retains its flexibility in extremes of heat and cold. The flame-resistant glove has a seamless palm.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 846.

Fitts Is a Mack Manager

K. L. Fitts recently took on the position of Manager of Off-Highway Truck Sales for Mack Motor Truck Corp., New York, N. Y. He succeeds P. J. Fleming, who recently retired after a long career with Mack.

Mr. Fitts, who joined Mack in 1945, will continue to make his headquarters in the home office, Empire State Building, New York, N. Y.



STILL LOW-COST POWER

ATTENTION HIGHWAY CONTRACTORS! GET READY FOR YOUR SPRING AND SUMMER CONTRACT!

Use LUCEY time-tested steam boilers for your hot mix plants.

Now being used by more than fifty contractors who want sufficient steam when they need it.

LUCEY will give you that and more, 17" to 20" steam storage space above low water level, the full length of the boiler.

Built in sizes to take care of large or small operations—easily transported.

Write for our bulletins 150-151 for complete specifications and other engineering recommendations.



SMOKE STACKS

• BREECHINGS • FLY ASH REMOVAL UNITS
ASME UNFIRE PRESSURE VESSELS

APRIL, 1953



THE New WHITE Permite Concrete Curing Compound PW-40 is winning immediate favor with contractors and engineers. They obtain superior curing with Permite PW-40 because the white color reflects the infra-red rays of the sun. Thus it prevents sharp temperature changes, reduces expansion and contraction during the curing process.

The white color of Permite PW-40 also makes possible a more even distribution of the curing compound. The white color gradually weathers away, leaving no permanent color change.

Permite PW-40 meets the specification of the Corps of Engineers, U. S. Army, No. CRD-C-300-52. Write or send coupon below for complete data and name of nearest distributor.

Permite provides a complete line of 100% Resin and Resin-Wax Concrete Curing Compounds to meet all existing Federal, State, County and City specifications.

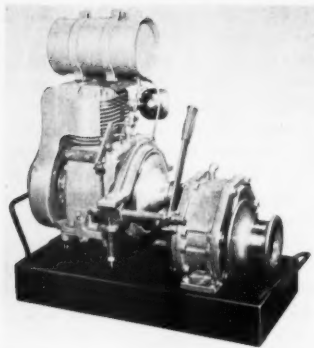
A few good distributor territories still open.

ALUMINUM INDUSTRIES, INC., 2438 Beekman St., Cincinnati 25, Ohio



Send me test data and complete information on Permite WHITE Concrete Curing Compound PW-40 and name of nearest distributor.

Name.....
Address.....
City..... State.....



A Portable Winch

A lightweight, portable, gasoline-powered winch with a capstan-type drum for critical control of loads has been announced by Stampco Products, 2424 E. Franklin Ave., Minneapolis 6, Minn.

The Gypsiwinch models are equipped with gasoline power units ranging in size from $\frac{3}{4}$ hp to $7\frac{1}{2}$ hp. Electrically powered models are also available. Two gripper-type handles facilitate moving the hoist about the job while the fabricated all-steel base may be secured by $\frac{1}{2}$ -inch lag bolts to provide a stable platform for pulling or lifting.

The capstan permits accurate spotting of load, allowing the operator to skid the line by slacking off pressure while the capstan is rotating. Using this principle, a heavy load may be taken up and stopped very slowly, with no stress on rigging or equipment. A capstan line may be retrieved more speedily than a drum line and eliminates need for level winding.

The Gypsiwinch is also available in combination with cable drum, permitting use of either hoisting cable or manila line. Gasoline and electric power units used on the Gypsiwinch are instantly reversible and operated by a conveniently located lever control.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 852.

Kennedy Is President of ACI

Henry L. Kennedy is the newly elected President of the American Concrete Institute for 1953. Mr. Kennedy, Manager of the Cement Division of Dewey & Almy Chemical Co., Cambridge, Mass., has been a Consulting Engineer for 17 years, specializing in reinforced-concrete design and construction. His experience in that field involves actual practice in the east and west coasts, middle west, Canada, Germany, England, and South America.

A member of ACI, Mr. Kennedy is the author of several papers including "Recent Developments in Concrete Durability" which won for him the Herschel Award from the Boston Society of Civil Engineers in 1947.

Two other ACI elected officers were: Charles S. Whitney, Consulting Engineer, of Ammann & Whitney, New York, N. Y., who was elected Vice President for two years; and C. H. Scholer, Head of the Department of Applied Mechanics, Kansas State College, Manhattan, Kans., who will continue as Vice President, a post to which he was elected in 1952.

Portable Masonry Saw

A new portable masonry saw has been announced by the Champion Mfg. Co., 2028 Washington St., St. Louis 3, Mo. The Tak-A-Bout's mounting is built of tubular steel. The unit weighs 245 pounds and has provision for accessory wheels for movement on the job.

Four models are available, two of which have a self-contained water system and a self-priming pump for wet cutting. The dry cutting models can be converted to wet cutting with a kit. The 14-inch-blade models have a $1\frac{1}{2}$ -hp motor, while the 12-inch-blade models have 1-hp motors.

For further information write to



the company, or use the Request Card at page 18. Circle No. 807.

Galion Movie on Grader

A new 16-mm color-sound movie has been completed by The Galion Iron Works & Mfg. Co., Galion, Ohio. The 23-minute film, entitled "Galion Makes the Grade", shows the Galion motor grader performing many operations during actual construction and maintenance work, and includes sequences on the manufacture of the grader, its hydraulic system, hydraulic side shift, gear-type tandem drive, and range of operating speeds.

The film will be shown by all Galion distributors, on request. Organizations interested in showing it should write direct to The Galion Iron Works & Mfg. Co., Galion, Ohio.

THINK BIG...

WHEN YOU THINK CRUSHING AND SCREENING

THINK CEDARAPIIDS. ON EVERY JOB!

YOU aggregate producers are in a business where you have to think *big* in terms of the production and performance of your equipment. It just naturally leads to "thinking Cedarapids" for every job, because Cedarapids equipment is designed by construction men for construction men. Cedarapids engineers know the problems of the field because they're in the field finding out what it takes to keep ahead of changing conditions and methods, and meet the demands of constantly increasing production. They know *you* have to make money to stay in business . . . so they de-

vote every effort toward designing types sizes of equipment to meet your specific requirements at the low operating and maintenance costs that give you a definite advantage in competitive bidding as well as a comfortable profit.

Whether your next job is large or small, difficult, it will pay you to get complete information about the Cedarapids equipment that helps *think big*. Your Cedarapids distributor will recommend the equipment that gets the results for you, at the lowest cost . . . call today for facts and figures.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.



BIG PERFORMANCE

The Cedarapids "Rock-It" is an in-one unit that reduces 22" down to road stone or aggregate operation. Capacity? Aurora stone Products, of Aurora, averaged a consistent 100 tons per hour on a 50,000 ton road job. Their "Rock-It" has produced 100 tons per hour and also 150 tons per hour on different jobs well ahead of schedule.

For crushing gravel, "Rock-It" Plants are now available in 3018 Roll Crusher, in place of 3033 or 2033 Hammermill, sired. Your Cedarapids distributor can help you select the right plant for your requirements.

Levers Replace Cables On Scraper's Controls

A new 12-yard model has been added to the standard 15.5-cubic-yard scraper and 18-yard twin-power unit made by the Euclid Road Machinery Co., 1361 Chardon Rd., Cleveland 17, Ohio. In all three models levers replace cables and sheaves formerly used to multiply the stroke of hydraulic jacks that actuate the bowl lift, apron lift, and roll-out ejector. The jacks for the bowl lift and apron lift are mounted vertically and have been incorporated in the torque tube. This, together with the lever arrangement, lowers the height of the



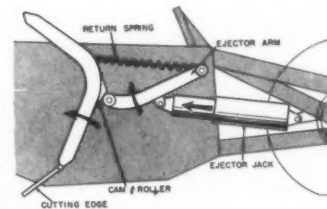
The new 12-yard Euclid scraper.

scraper nearly 2 feet, and is said to make it easier to top-load with shovels and draglines. About 90 feet of control cable is eliminated.

The components of the hydraulic system have been grouped together on the front of the tractor. The pump is mounted internally in the

hydraulic tank, simplifying piping and eliminating the use of suction lines. Two lever-action hoists raise the bowl to a maximum height of 28 inches. The apron is lifted by a hoist and lever connected to the apron by 11 feet of cable. This is the only cable used on the scraper. The apron and ejector can be operated together.

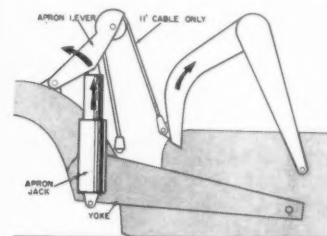
A lever also operates the roll-out ejector. This lever has a roller acting against the ejector, to push it forward. Near the end of the stroke the roller rides over a cam



Ejector operation

surface which accelerates the action, producing the necessary "snap" to dump sticky materials.

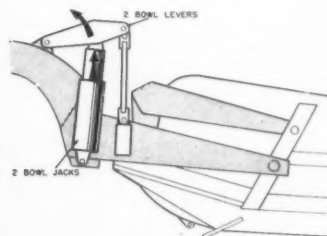
The new 12-yard scraper is powered by either a 200-hp Cummins engine or a 150-hp General Motors engine and has a 5-speed transmission. Tire size is 21.00 x 25. Struck capacity is 12 cubic yards;



Apron operation

heaped capacity is 14 cubic yards at 3 to 1 slope and 16 cubic yards at 1 to 1 slope.

The 15.5-cubic-yard scraper is identical in construction except for capacity, engine size, and number of forward speeds. The 15.5-yard scraper formerly was offered only with a 275-hp Cummins engine. The new model will be supplied with either a Cummins or General Motors 275-hp engine. It has a 10-speed



Bowl operation

transmission. Struck capacity is 15.5 cubic yards and heaped capacity 18 cubic yards at 3 to 1 slope and 21 cubic yards at 1 to 1 slope. Tire size is 24.00 x 25.

For further information write to the company, or use the Request Card at page 18. Circle No. 862.

Preventive maintenance is more essential than ever. The careful selection and use of good lubricants at regular intervals will help your equipment operate efficiently.

ING PRODUCTION

Rapids Double Impeller Impact Breakers can't be beat when it comes to breaking up tremendous daily tonnage records. Concrete Materials Construction Company, using a \$650, averaged 600 tons per day and hit a peak day's production of 14,472 tons on their New Turnpike contract.

Model 2020, Western Indiana Company worked an "impossible" job and made money. Their job was to produce gravel with crushed particles in a pit containing 19% soft stone, several seams of conglomerate, with most of the material in the 1" to 1 1/2" range, and plus 5%.

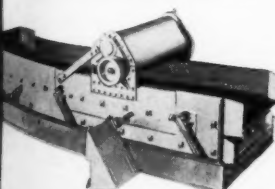
Large volume of cubical shaped material, for extremely low-cost production, and for profitable production under tough conditions, be sure to investigate the advantages of the Impeller Impact Breakers. About the new portable plant.

BIG PROFIT

Cedar Rapids Construction Company Cedar Rapids United Plants... own six of them! They can do an average hourly production of 10 tons from each plant... or combine the four basic units of United Plants in a number of different ways to meet specifications for every size products on jobs.

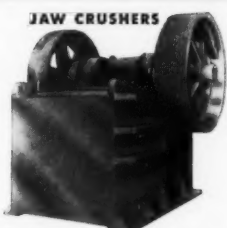
to B. L. Anderson of Cedar Rapids, Iowa. One of his three United Plants is turning out 4 products at a 210 ton per hour clip. That's "big" about production.

HORIZONTAL VIBRATING SCREENS



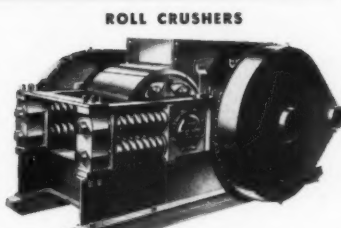
Efficient horizontal screening action, highly accurate gradation and large capacity combine to give you faster and more profitable screening at lower cost. Sizes range from 3' x 8' to 14' in double or triple deck styles.

JAW CRUSHERS



They're built to handle the toughest rock without pampering and produce up to 500 tons per hour at low cost! Available in 6" x 12" to 32" x 40" sizes in plain or roller bearing models. Ask about Twin Jaw Crushers for even higher capacities.

ROLL CRUSHERS



Here are the ideal units for producing a large volume of smaller sized aggregates. Seven sizes (from 16" x 16" to 40" x 24") available with two smooth or two corrugated roll shells, or one of each, depending on the product desired.



Here is part of the imposing fleet of floating pile-driving rigs, derrick boats, concrete plants, supply barges, and sundry craft that Hardaway Contracting Co. is using to bridge Tampa Bay.

Bridging 15-Mile-Wide Tampa Bay

By WILLIAM H. QUIRK, Editor

Long Causeway Includes Five Separate Bridges

• SOMETIME in 1954, when the new Tampa Bay bridge is completed, motorists will be able to cut off 40 miles in travel between St. Petersburg and Bradenton on the west coast of Florida. The 15-mile crossing will eliminate the long drive through Tampa at the head of Tampa Bay, or the alternate choice of the ferry which now plies between St. Petersburg and a point on the mainland north of Bradenton. Financed by revenue bonds, the project will be a toll facility of the State Road Department of Florida. Design and construction are under the supervision of Parsons, Brinckerhoff, Hall & Macdonald, New York City consulting-engineer firm. Work started in October, 1950, and the estimated cost is \$21,000,000.

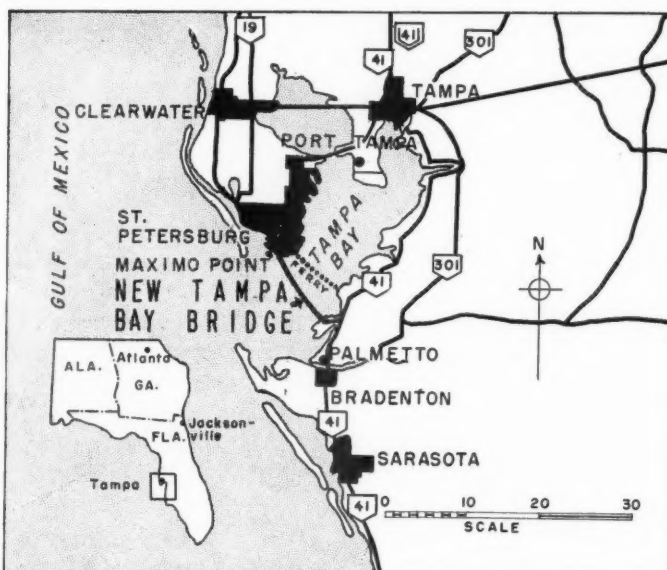
The long causeway includes five separate bridges — A, B, C, D, and E — and connecting hydraulic-fill embankments. It begins at Maximo Point in Pinellas County on the north or St. Petersburg end, and ends 79,815 feet to the south and east about a mile above Palmetto, on U. S. Highway 541, in Manatee County. Palmetto is directly north of Bradenton. Bridges and fill will accommodate two lanes of traffic. The structures are designed for H-15-44 loading.

This article will describe the types of structures making up the project, while the accompanying article will go into some of the varied construction details.

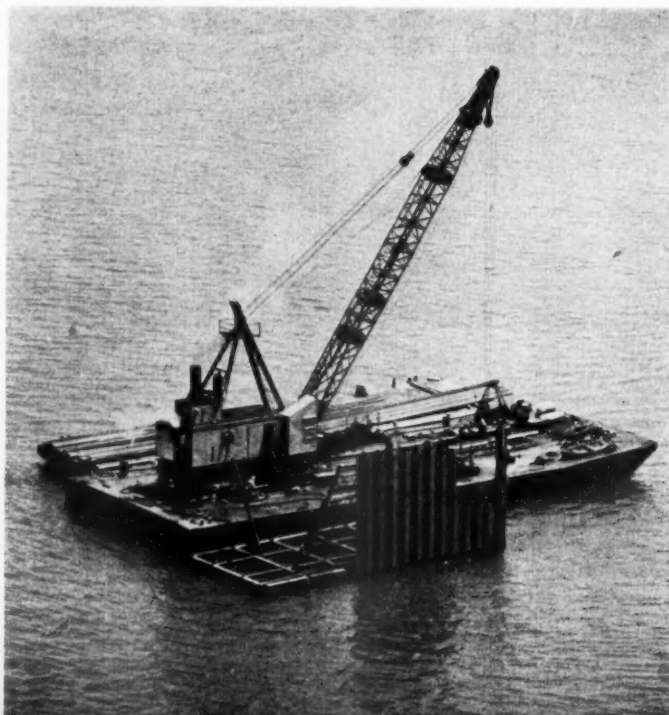
Hydraulic-Fill Embankments

Work first got under way at the north end on the 4,440-foot-long embankment that extends south from Pinellas Peninsula to the first bridge, known as structure A. This initial contract was awarded to the Atlantic Dredging & Construction Co., of Sat-

(Continued on page 33)



A Whirley crane sets and drives sheet piling around a cofferdam frame.



Fleet of Floating Rigs Handles Big Concrete Job

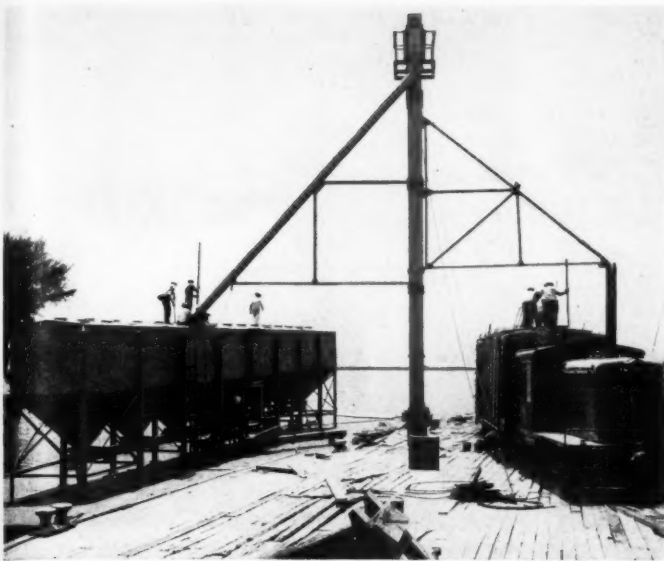
• AS might be expected on a 15-mile water-crossing project, the contractors engaged brought to the job site an imposing fleet of floating equipment that included pile-driving rigs, derrick boats, concrete plants, supply barges, and craft to distribute the workmen around the job. Most of the equipment is the conventional type found in the inventory of a typical large contracting firm, but some was built especially for the needs of this particular job, such as Hardaway Contracting Co.'s floating concrete plants. Since a large portion of the bridge is built of precast members—piles, deck, and girder beams—the two principal bridge contractors set up adequate plants on shore to handle this phase of the work.

Hardaway at first, however, concentrated on getting a start with the construction of the 32 concrete piers for bridge C, so that the erection of the steel superstructure might follow in order. At the same time a casting yard was laid out and concreting equipment was installed at Port Tampa, on the west side of the peninsula that projects into the bay south of the city of Tampa. Connecting highways and a spur of the Atlantic Coast Line Railroad afford transportation facilities to the plant site, which is the unloading center for all material used on the contract.

Bridge Piers

From the span over the main channel in bridge C, the 32 piers are numbered from 1N and 1S respectively on the north and south sides of the long structure. At the main piers the water in the bay is 30 feet deep. Below the bay bottom at pier 1N, borings disclosed 10 feet of shell mixed with limey sand; followed by a mixture of black silt, fine shell and sand about 12 feet thick; then a 10-foot layer of limey marl; and finally

CONTRACTORS AND ENGINEERS



At a dock in Port Tampa, bulk cement is unloaded from railroad cars, elevated, and then dropped through a swivel chute to the 8 Heltzel hopper-type bins on the barge.



Out on the bay, the cement is transferred from the supply barge to the Blaw-Knox bins on the floating concrete-mixing plant.

alternate layers of hard and soft limestone. These same substratum materials were encountered over most of the bay area but in no consistent pattern or depth. Bedrock was reached only on the south portion of the project.

Piers 1S and 5S inclusive, and all the piers on the north side, are supported on steel H-piling—Bethlehem 10, 12, or 14-inch sections up to 53 feet long, and usually spaced on 3-foot, 6-inch centers both ways. The other piers, 6S through 16S, on the south side are founded on spread footings. All piers are built within cofferdams of Bethlehem sheet piling—M116 and MZ32 sections, 50 feet long.

The conventional procedure was followed in pier construction. After the cofferdam was built, the excavation was clammed out, foundation

piles were driven where required, the underwater seal was poured, a cofferdam unwatered, then forms were erected and filled with concrete to complete the structure.

Piers 1N and 1S are the largest, the other piers gradually decreasing in size toward the abutments. For these two main piers, cofferdams 108 feet long x 45 feet wide were required. Above the footings, the first four piers on each side of the main span have twin shafts. Piers 5 through 16 have a single shaft, flaring out in a T-shape at the top.

Heavy Cofferdam

Because of the strong winds and heavy seas that are encountered in Tampa Bay, the contractor built sturdy all-steel cofferdams. Frames were assembled in the Port Tampa yard, and barged out to the site. One

floating rig picked up the frame and spotted it in position, while another rig drove 60-foot spud piles at the corners as anchors. Then the steel sheeting was driven with a McKiernan Terry 9-B-3 hammer. Frames had either two or three rings, according to the depth, consisting of 12 or 14-inch H sections. For extra strength and rigidity a 20-inch beam was placed around the top of the outside, and pulled in snugly with turnbuckles hooked to cables. Diagonal and cross bracing also employed 12 or 14-inch steel.

These structures stood up well against a violent storm that lashed Tampa Bay last October during the hurricane season. Hardaway Contracting Co. suffered considerable damage to its floating equipment, and several rigs were lost while others were sunk and were recov-

ered only after laborious salvaging operations.

Foundation H-piles are being driven with 10-B-3 and 11-B-3 hammers rigged for underwater operation with 50-foot spud followers attached rigidly to the hammers. Floating rigs for the pier work included:

No. 1—A 52 x 137-foot barge mounting a Wiley whirley with a 100-foot boom and 25-ton lifting capacity.

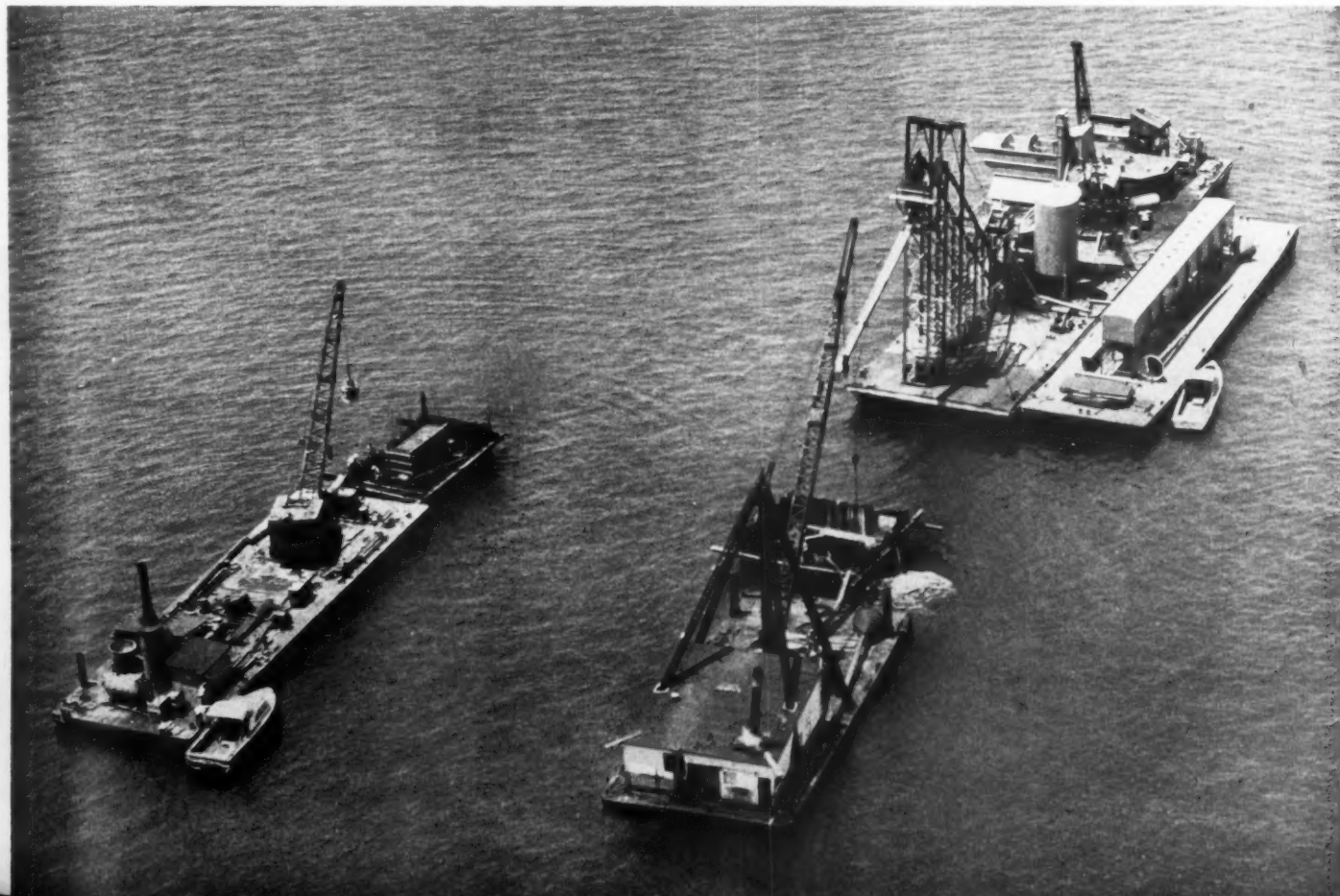
No. 2—A 32 x 120-foot barge mounting a Clyde whirley with a 100-foot boom and 40-ton lifting capacity; sunk, now being salvaged.

No. 3—A 30 x 120-foot barge mounting a Northwest crane—25-D, ¾-yard capacity.

No. 4—A 32 x 120-foot barge mounting a Link-Belt Speeder 2½-

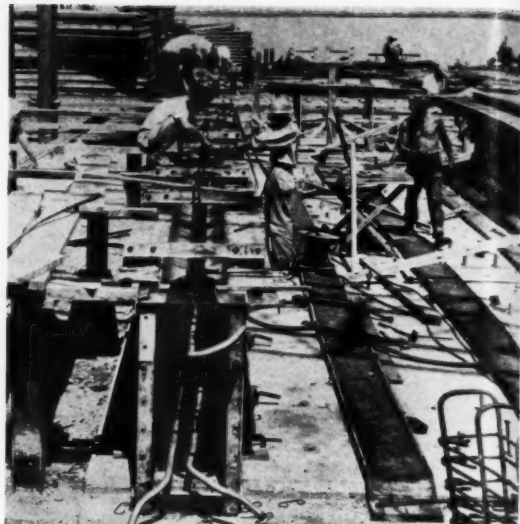
(Continued on page 29)

The concrete pier at the left begins to take shape as Hardaway's floating concrete plant, upper right, prepares to pour the next pier.





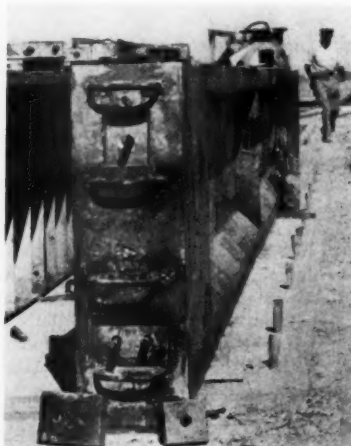
1. Stressteel bars are slipped into Flex-Tubes. These flexible metal tubes insure proper alignment.



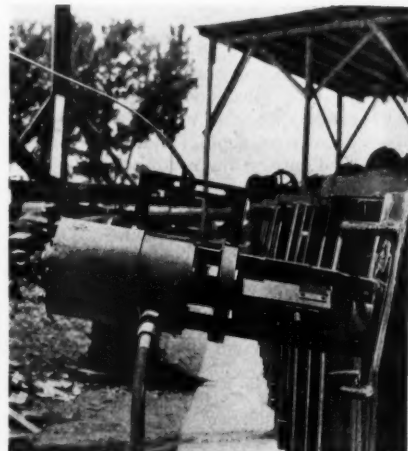
2. Workmen build up the steel form and place hairpin spacing bars.



3. Overall view of girder form. A steel plate will be bolted to each end.



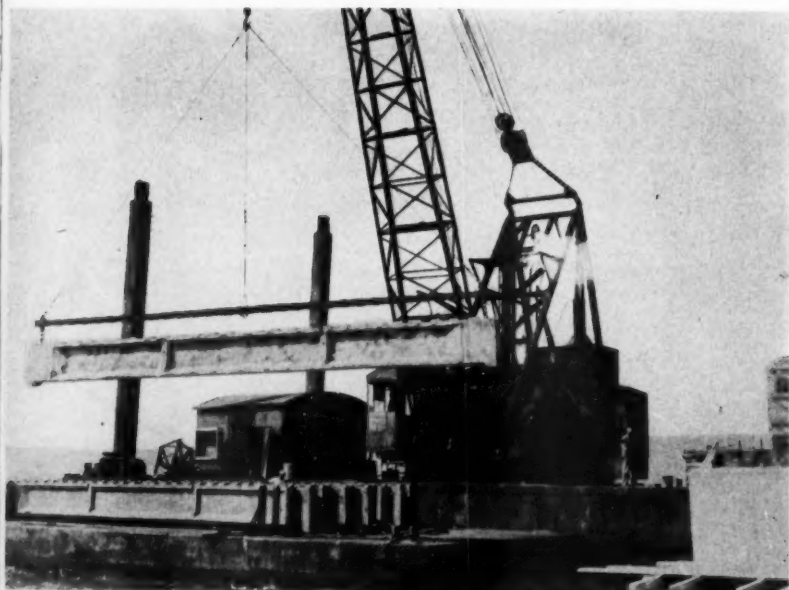
4. Plates (at bottom) are placed over the bar ends before prestressing.



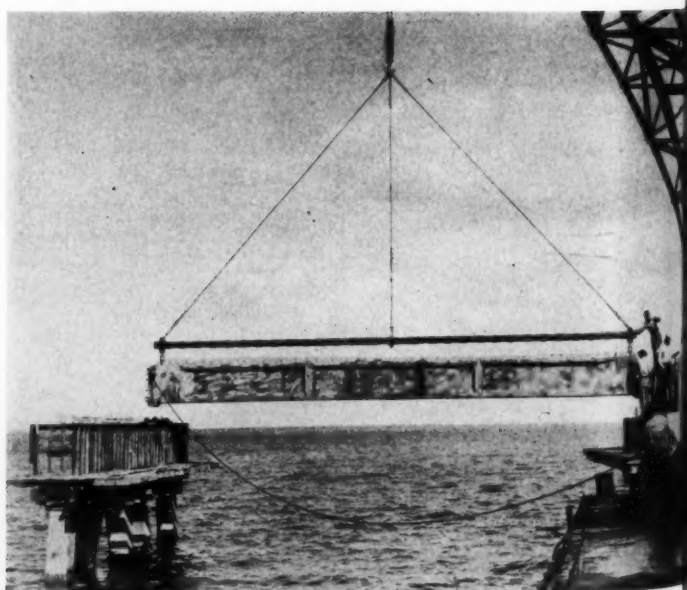
5. Here the top curved bar is being prestressed.

Precast Prestressed Girders For Tampa Bay Bridge Trestle

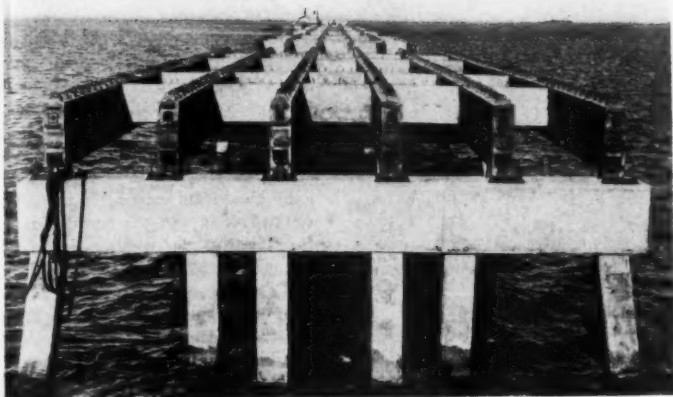
(See articles starting on page 26)



6. Out on the bay, a Whirley crane picks up a prestressed girder from the supply barge. . . .



7. . . . and places it in position on the pile caps of two adjoining trestle bents.



The trestle begins to take shape with the six 48-foot girders in position across the pile caps.



Workmen use a Simplex jack to stress the transverse bars between the girders.

Fleet of Floating Rigs Handles Job

(Continued from page 27)

yard-capacity crane; sunk, but replaced with similar rig.

No. 5—An American stiffleg derrick boat, 40 x 75-foot barge, with a 90-foot boom and an American hoist; sunk, now being salvaged.

No. 6—A 2-cubic-yard concrete plant with one crane and inclined runway, barge 40 x 175 feet.

No. 7—A 1 1/4-cubic-yard concrete plant, tandem drums, with 2 cranes, barge 38 x 175 feet. Original No. 7 sank and has since been replaced.

No. 10—A 42 x 100-foot barge mounting an American Revolver crane, 60-ton capacity.

No. 11—A 38 x 85-foot barge mounting an American Revolver Crane, 22-ton capacity, with a 100-foot boom.

Some units are equipped with anchors and cables for positioning, while other rigs use spuds for that purpose.

Unwatering of the cofferdams after the seals were poured was generally done with a pair of Jaeger 6-inch Sure-Prime pumps or with well-type pumps. Once the water was removed, a Jaeger 3-inch pump sufficed to keep the cofferdam dry. A mixture of sand and cinders was dumped around the bottom of the sheeting to form a seal against the water. Cofferdam frames were used over and over again, and the sheeting was pulled with a Vulcan 800 pile extractor.

Form Work and Materials

Form panels were built on shore of 2 x 6 tongue-and-groove lagging, lined with 1/4-inch plywood and backed by 4 x 6 horizontal walers on 12 to 18-inch centers, held in place with Richmond ties. No vertical studs were used. Floating rigs lifted the form sections, usually 7 feet high, off the supply barges and set them in place. Reinforcing steel came from the Florida Steel Products Co., in Tampa; the Republic Steel Co., and Virginia Steel Co., in Birmingham, Ala.; and, because of the general shortage when the project was getting under way, some steel was shipped in from Belgium and Luxemburg.

Materials were brought to the bridge site from the yard on barges after an average 2-hour sail down the bay. Most of the hauling was done with three barges—two measuring 30 x 100 feet and the third, 33 x 120 feet. Three tugs did the

towing, and three personnel boats handled the men.

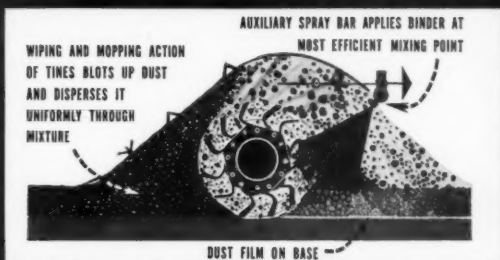
Bulk cement came from the Florida Portland Cement Co., in Tampa,

and Darex, an air-entraining agent, was added at the mixer. Crushed limestone, graded from 1 1/2 inches down, was supplied by the Florida

Crushed Stone Aggregate Co., of Brooksville, Fla. Sand came from nearby pits in Oak Ridge, Fla. Bay

(Continued on next page)

"IN FLIGHT"
COATING BINDS
AGGREGATE FASTER
... MORE FIRMLY



WITH THE

**SEAMAN
TRAV-L-PLANT**

In the Seaman TRAV-L-PLANT a high output spray-bar applies bitumen directly into the spill-over ahead of the rotor in the mixing chamber, coating the aggregates "in-flight," while the binder is most readily mixed. (Note diagram above).

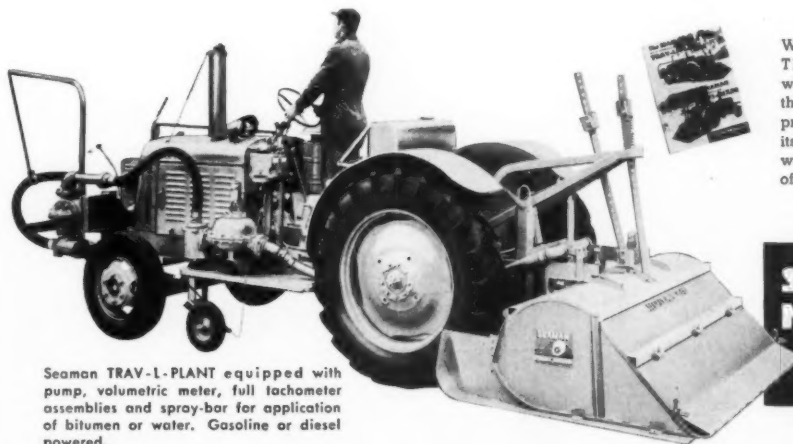
Since each particle (fine and coarse) is spinning and tumbling through the air, all surfaces are well coated by the concentrated spray. The spillover provides constant re-mixing cycles. The materials carried in the mixing chamber are further coated by rolling in contact with the binder. This "carry" also corrects variations in

aggregate gradation as the Seaman moves ahead.

The SEAMAN not only coats and mixes but also *blends* the coarse and fines so that particles of each size, from dust and chips up to the larger stone, are distributed uniformly throughout.

Crown and grade as originally established are held perfectly. The mix is ready for immediate compaction.

Investigate the Seaman TRAV-L-PLANT. See for yourself why the TRAV-L-PLANT provides a stronger pavement in less time, with less auxiliary equipment,— and therefore at far less cost.



Seaman TRAV-L-PLANT equipped with pump, volumetric meter, full tachometer assemblies and spray-bar for application of bitumen or water. Gasoline or diesel powered.

Write today for the new TRAV-L-PLANT Bulletin which completely describes the basic Seaman-mixing principle, the machine and its use. Profusely illustrated with job pictures and details of mechanical operation.

**SEAMAN
MOTORS
Inc.**

282 North 25th Street
Milwaukee, Wisconsin

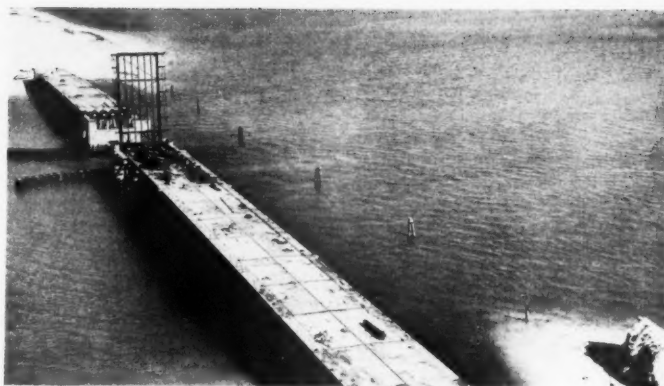
Fleet of Floating Rigs Handles Job

(Continued from preceding page)

water was used in the mix for all concrete below the tops of the footings. Above that level, fresh water from shore was transported by barge to the mixing plant for use in the concrete.

Floating Concrete Plant

Hardaway's floating concrete plant—rig No. 6—assembled for this job, is mounted on a steel barge—35 x 135 x 8 feet deep. Tanks in the hull contain 60,000 gallons of fresh water. At the bow is an inclined steel framework, 50 feet high and 70 feet long, to the top of which a 2-yard hopper of concrete is raised by an American 2-drum hoist powered by a GM diesel engine. Tracks for the bucket run along the steel



View looking northerly along structure A toward Pinellas Peninsula. The south bascule leaf is in raised position for the casting of the counterweight.

incline. From the high point at the forward end the concrete is discharged down a closed chute that can pivot on a swivel.

Behind the steel framework is a Blaw-Knox batching plant. The ag-

gregate bins hold 20 yards of stone and 15 yards of sand, while the cement bin contains 240 barrels with a 300-barrel silo alongside for overflow storage. Materials are fed to a Koehring 56-S mixer directly under

the plant where batches are mixed for 1½ minutes, then discharged into the bucket and lifted to the top of the steel tower. The plant has a capacity of 60 yards an hour.

At the rear of the batching unit—rig No. 6—a Lima crane with a 60-foot boom and an Owen ¾-yard clamshell bucket charges the aggregate bins from supply barges that tie up along the starboard side of the floating plant. Two sand and stone barges, 35 x 195 feet, haul the material from the Tampa yard. The port side is left free for the 30 x 120-foot cement barge to unload. Hardaway has two such barges. Each cement barge has lined up on deck eight Heltzel enclosed hopper bins that hold a total of three carloads or 750 barrels of cement. Loaded from cars at Port Tampa, this barge unloads to the batch plant through enclosed worm-gear conveyors. Syntron vibrators in the hoppers shake the cement loose from the side walls. One of these cement barges was sunk in the October storm but is being replaced.

In Reserve

In the hull of the cement barge are tanks holding 13,000 gallons of fresh water. A 3-inch Jaeger pump at the plant takes water for the mix from either the bay or the storage tank on the barges. In reserve at the stern of the floating concrete plant is a Winslow Binanbatch with a 2-compartment storage bin and a Jaeger 1-yard mixer. This standby equipment is available should any breakdown occur to the main plant. As concrete is placed it is vibrated with Jackson vibrators.

To supplement this first floating plant in use, Hardaway later put into operation another concrete plant—rig No. 7—with a crane at each end. One crane charges the aggregate bins, while the other swings buckets of concrete to the forms instead of using a chute. When the work on the trestle got under way, more floating equipment was added to the fleet. Most of the craft are in constant communication with each

stop air pollution

with an "LP"

"MULTIPLE-ACTION" SCRUBBER*

• Six different principles incorporated into a single unit make the Johnson-March "LP" Multiple-Action Scrubber the most efficient yet developed for removing dust from stack discharged gases. "LP" Scrubbers are particularly adapted to the control of dust in asphalt plants, limestone plants and wherever stack dust is a problem.

The Johnson-March "LP" Scrubber employs many unique features not found in any other equipment which insure final removal of the low and sub-micron dust particles.

Look at these Advantages...

- Completely portable . . . easily assembled and relocated
- Low back pressure—use with your present fan equipment
- Uses less water. Water can be recirculated
- Durable, heavy steel plate construction
- Low maintenance
- Extremely high efficiency dust recovery

Send Now for this Free Illustrated Brochure. Clip and mail the attached coupon Today.

THE JOHNSON-MARCH CORP.
1724 Chestnut St., Philadelphia 3, Pa.

Without obligation, I'd like to know more about the use of the Johnson-March "LP" Scrubber in my plant. Please send me the FREE BROCHURE.

NAME

COMPANY

ADDRESS

CITY

STATE

*Pat. Pending

C&E-1

Specialists in Dust Control

Johnson

March

1724 CHESTNUT STREET
PHILADELPHIA 3, PA.

CONTRACTORS AND ENGINEERS

"Where To Purchase Guide"

is now available.

If you wish a copy of this pocket - size booklet of names and addresses of manufacturers and suppliers of hundreds of construction products, circle No. 850 on the reply card to be found in this issue facing page 18 and mail card to

CONTRACTORS AND ENGINEERS

470 Fourth Avenue
New York 16, N. Y.

CONTRACTORS AND ENGINEERS

mixed
charged
to the
plant
hour.
unit—
with a
-yard
aggre-
s that
side of
and
al the
l. The
30 x
load.
arges.
up on
opper
car-
ment.
ampa.
plant
con-
the
loose
these
the
laced.

barge
ns of
pump
e mix
orage
at the
plant
with a
nd a
ndby
any
plant.
rated

ating
put
crete
ne at
e ag-
wings
forms
n the
way,
dded
t are
each

e
this
of
of
up-
con-
cle
ard
sue
mail

ID

NEERS

other, and with the yard in Port Tampa, by means of Motorola 2-way radio.

The Mix

Different mixes were required for the underwater seal and the above-water concrete. In general 6-bag batches were used. Typical weights for a 1-bag unit of each kind of concrete are as follows:

	Seal Concrete	Class A Concrete
Cement, Type 1	94 lbs.	94 lbs.
Sand	168 lbs.	165 lbs.
Stone	305 lbs.	325 lbs.
Water	6.2 gals. salt	5.4 gals. fresh
Darex	0.5 ounce	0.5 ounce

For each mix the cement factor was 1.5, but while the seal concrete had a 6-inch slump, the Class A vibrated concrete had only a 1 to 3-inch slump.

In the prestressing work at the yard, a 5,000-psi concrete was required with a 4 to 5-inch slump, and a total cement factor of 6.60 bags to the cubic yard. Weights on a 1-bag basis follow:

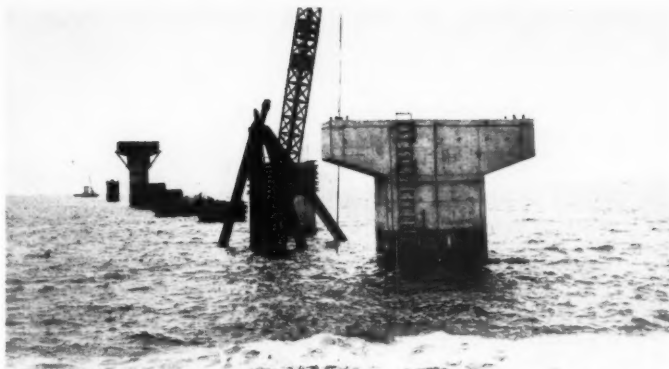
Cement, Type 1	94 lbs.
Sand	179 lbs.
Stone	281 lbs.
Sika Plastiment (admixture)	1 lb.
Water	5.4 gals.

At the Yard

At the casting yard in Port Tampa, Hardaway set up a traveling gantry crane and used a stiffleg derrick, together with a 30-ton diesel-driven locomotive crane for the bulk of the heavy lifting. For the concrete, dry batches were hauled from a Heltzel batch plant to a 34-E paver in a fleet of 7 trucks. A slab of concrete was poured as a casting bed on which the steel forms were laid out.

For the prestressed girder beams—46 feet 10 inches long x 3 feet 4 inches deep—three Stressteel special high-strength bars, 1 inch in diameter, are placed in the forms before the concrete is poured. The web of the beam is 4 inches thick and the flanges are 14 inches wide, with a raised key over the top flange to bond into the deck supported by the six stringers. All three bars are within the bottom flange of the beam at the mid point, and the two outer bars continue in a straight line to the anchorages at the ends. The center bar curves upward to come out near the top flange at the end anchorages, thereby minimizing end eccentricity. Fiber stresses at the ends are thus reduced, and shear forces are resisted. The bottom bars are kept 4 inches apart to give clearance for the anchor plates and jacking equipment.

Since the post-tensioning method of prestressing is specified—meaning that the stressing of the bars is done after the concrete has hardened—it was necessary to leave cavities in the girders through which the bars might be passed. Accordingly, the contractor began plac-



T-shaped piers for structure C begin to rise. Part of the boom and A-frame of rig No. 5, sunk in a storm, can be seen between two piers.

ing inflated rubber hoses in the forms, concreted around them, and later pulled out the hose leaving a conduit for the steel. This was tried with the first two beams but did not work out so well. It was too

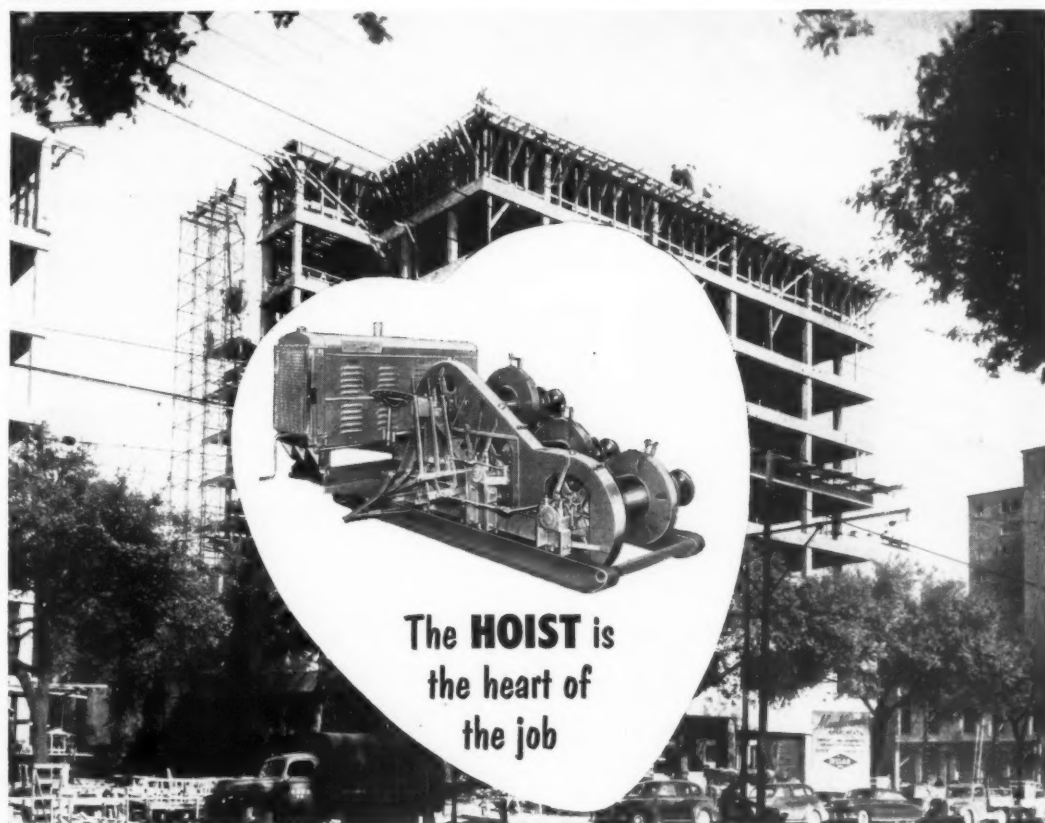
difficult to maintain the proper alignment of the hose during casting. As a result the hole was too wavy to permit the entry of the rods.

This difficulty was overcome by

the use of Flex-Tube, a flexible-metal duct tubing, 1 3/8 inches ID, in which the 1-inch bars were slipped. The tubing is light, easily handled, and slides readily over the prestressing bars. Bars and ducts are then placed in the forms and held in position with spacing bars. Ducts are cut off to length after passing through end plates which are then bolted securely. The upper plate is 5 x 5 x 1 1/2 inches, while the lower plate for the two bars is 9 1/4 x 6 x 1 1/2 inches. The girder is then ready for pouring, which is done with constant vibration of the concrete.

Bars are next prestressed by Pre-load with hydraulic jacks. After the bars are correctly elongated, about 2 1/4 inches, the anchor nuts are fastened and the jack released. Initial stress and working stress are 97,000 and 80,000 psi respectively.

(Concluded on next page)



Those men up on top may be the smartest, fastest crew you've ever hired . . . and yet turn in a poor day's work if you have trouble with the hoist. Because the tower is the lifeline that keeps materials moving; and the hoist is the heart of the job.

Chris Larson Co. of New Orleans used an American Model 75 on the Mayflower Apartments, shown above; and the operator commented that no other hoist could compare with the American in operation, safety, and long wear.

Why? The big difference, we believe, is in better basic design, created through long experience. That means stronger bed and side frames; external contracting band clutches; precision-cut steel gears; shafts that hold their alignment. If you want that kind of extra quality, and the better speed, accuracy and dependability that go with it, select your hoist from the broad American line. Your nearest American distributor can help you find exactly the model that's best for your needs.

3105

"Spray it and forget it"

HUNT PROCESS
concrete curing
compounds

- CLEAR • TILT-UP
- BLACK • PIGMENTED

HUNT PROCESS CO. INC.
7012 Stanford Ave., Los Angeles, Calif.
HUNT PROCESS CORP.—SOUTHERN
Ridgeland, Mississippi

Modernize...economize...with

American Hoist

AMERICAN HOIST & DERRICK CO. • ST. PAUL 1, MINN.

For safety...insist on

American CROSBY

Load-Rated!
WIRE ROPE BLOCKS



Safe working capacity embossed on side plate. Every block packaged.

Fleet of Floating Rigs Handles Job

(Continued from preceding page)

The straight bars are jacked at one end only, while the curved bar is jacked at both ends. Grout is later injected under pressure into one end of the bar cavity, and continued until it discharges at the other end. This bonding of the prestressing increases the ultimate strength, reduces the size of cracks under overload, and is a guard against corrosion.

Work on the prestressed girders began in August, 1952, and the first composite members were erected on the bridge in November. After the six stringers for each span are set in place on 6-foot centers across the pile caps, precast diaphragms are positioned between the stringers at the third points for live-load distribution. A 1-inch-diameter bar in

a 1¼-inch hole passes through each transverse diaphragm, and also through the 4-inch web of the longitudinal girders. The rods are then prestressed with Simplex jacks and pumps. This transverse post-tensioning operation follows the field erection of the girders and diaphragms.

By the end of this year Hardaway's contract is expected to be well on the way to completion.

Rattlesnake, Florida

The Hendry Corp. headquarters in Rattlesnake, just west of Tampa, are well located for the big bridge project. A yard was laid out along the waterfront in which the piles and deck sections were precast. Timber piles were driven to support the concrete working slab on which the steel forms were placed. A 100-ton derrick boat on the water and a locomotive crane on shore



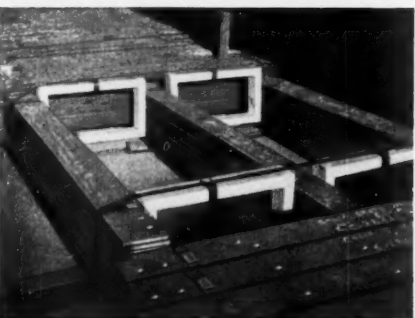
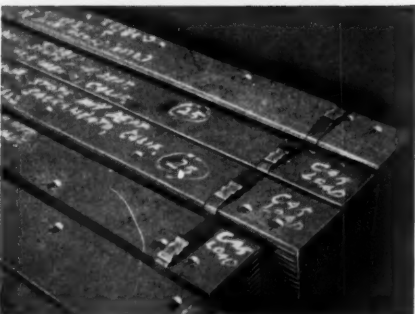
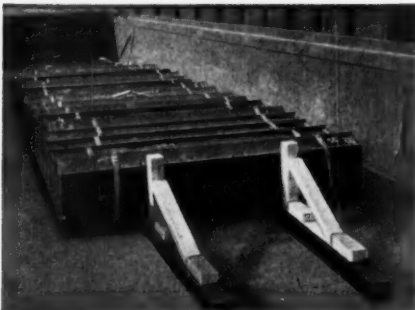
A floating American Revolver places an erection guide for the prestressed stringers.

handled the lifting.

The contractor devised a unique way of freeing a poured member from its mold. In a slot under the bottom of the form he laid a flat-

tened-out fire hose. When the concrete had cured sufficiently he inflated the hose, using about 25 pounds' pressure, to break the bond. The pile-supported foundation slab was a firm base for the hose to bear on. Members were picked up with eyebolts that were embedded in the concrete.

Piles were driven with a Vulcan No. 1 hammer held by a Lima crane mounted on a barge. The crane had a 90-foot boom. Caps were cast in place, the concrete being supplied by a floating plant consisting of a barge on which was mounted a Strayer 1-yard batcher and mixer and a Lima crane. Hendry Corp. also employed a Motorola 2-way radio system on its contract.



PACAL BLADES

for all your
earthmoving
equipment

Just as Pacal Blades resist wear, fit tighter... last longer, Pacal does a job for you. Whether you're just around the corner or 2,000 miles away, your Pacal Blades are expedited carefully. When you want blades, call on Pacal.

Use PACAL Heat Treated Plow Bolts...
they increase the efficiency
of PACAL Blades.



Write Department BJ-43

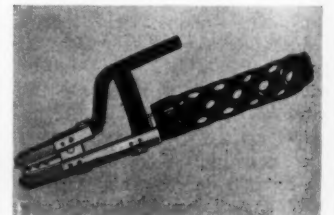
PAPER-CALMENSON & COMPANY

COUNTY ROAD 5 AND WALNUT ST., Adjoining Highway 36, ST. PAUL 8, MINN. • TELEPHONE: NEster 9436



New Electrode Holder

A new 400-amp insulated electrode holder has been announced by The Lincoln Electric Co., 2201 St. Clair Avenue, Cleveland 17, Ohio. The nose of the Cooltong Consists of a copper core between four and six layers of laminated, glass-



impregnated, plastic cloth. The copper core, in addition to reinforcing, dissipates heat so that it will not concentrate in the nose causing deterioration in the insulation.

The jaws are made of non-spatter Mallory 3 Metal. They will handle electrodes from 1/8 to 3/16 inches in size and have a wide opening to permit quick release of stubs.

For further information write to the company, or use the Request Card at page 18. Circle No. 763.

Euclid Personnel Shift

A. W. Lehman, for the past 12 years Advertising Manager of Euclid Road Machinery Co., Cleveland, Ohio, has resigned from that company to become Vice President of Richard T. Brandt, Inc., Cleveland, an advertising firm that recently received the Euclid account.

Mr. Lehman is a past President of Construction Equipment Advertisers, and is well known to distributors and users of Euclid equipment. In his new office at 1408 Keith Bldg., he will continue to work closely with Euclid.

CONTRACTORS AND ENGINEERS

Long Causeway Has Five Bridges

(Continued from page 26)

suma, Fla., on a low bid of \$338,200. It included another 10,090-foot section of fill between structures A and B, and a 7,260-foot fill between structures B and C. The hydraulic fill totaled 2,600,000 cubic yards. In general, embankments were built wherever the water in the bay did not exceed 11 feet in depth. Bridges, of course, were required to span the deeper water in the bay.

Atlantic used its 14-inch pipeline dredge Sadye-M to build the fill. This 700-hp unit obtained some of the material for the embankments by cutting a 12-foot boat channel parallel to and 1,700 feet west of the causeway. The new channel provides a needed connection between the Intracoastal Waterway at structure A and Bunces Pass that is spanned by structure B. Practically all the fill for this first contract was completed in about 18 months.

Hydraulic fill, totaling 1,300,000 yards, for the lower half of the project was placed by Benton & Co., of Tampa, Fla., under a \$241,828 contract. The 16-inch, 1,800-hp dredge No. 3 obtained material from various borrow areas for Benton's two embankment sections—3,770 feet between structures C and D, and 8,960 feet between D and the west end of Terra Ceia Island. This work is substantially completed.

Embankments are built up so that the crown of the road has an elevation of 7.25 MLW. The roadway consists of a 24-foot pavement, crowned from the center 1/4 inch to the foot, and flanked by 8-foot shoulders. Side slopes are 20 to 1 to the water line, then 10 to 1 to the bottom of the bay. The paving will probably be a flexible type, although no contract has yet been awarded. Shoulders and slopes will be stabilized and protected against wave wash and storms.

Two-Bridge Contract

Hendry Corp. of Rattlesnake, Fla., was awarded the contract for structures A and B on its low bid of \$838,940. A is 1,226 feet long, and consists of a reinforced-concrete trestle on either side of a 100-foot double-leaf steel-basculer span over the Intracoastal Waterway. B has a length of 1,552 feet, and is of similar design with an 82-foot steel fixed span over Bunces Pass. Bents have four 16-inch-square precast piles up to 60 feet in length, with the two outer piles battered and the two inner piles plumb. Every fourth bent is a 6-pile tower bent, and the spans are 36 feet. Caps measuring 3 x 3 x 33 feet are cast in place with the piles projecting one foot into the caps.

The 68 concrete decks, 36 feet long, making up the two bridges are precast. A deck is cast in two sections, each weighing 64 tons and measuring 36 feet x 18 feet 8 1/2 inches. Four beams, spaced 9 feet 10 inches on centers, support a 7 1/2-inch slab. On each side of the 28-foot roadway is a 3-foot sidewalk protected by a cast-in-place guardrail. The walks are primarily for fishermen who are fully aware that Florida bridges are choice locations for a good catch.

Principal items in the Hendry 2-bridge contract, which is scheduled

for completion this year, are approximately as follows:

Concrete—abutments, caps	935 cu. yds.
Concrete—basculer piers	925 cu. yds.
Concrete—precast decks, walks, curbs	3,905 cu. yds.
Reinforcing steel	533 tons
Precast-concrete piling	25,550 lin. ft.
Structural steel—basculer span	135 tons

Three Other Bridges

Largest of the contracts, covering bridges C, D, and E, went to the Hardaway Contracting Co., of Columbus, Ga., on a low bid of \$7,614,236. Part of the superstructure for bridge C is of structural steel which was handled under a separate \$3,873,991 contract to the Virginia Bridge Co., of Roanoke, Va., now the American Bridge Division.

Longest of all the five structures, bridge C stretches out for 5 miles between two sections of hydraulic fill. It consists of RC approach trestles, 1 1/4 miles long on the north end and 2 1/2 miles on the south end, flanking the main 1 1/4-mile bridge. The latter

spans the 30-foot-deep Mullet Key Channel, main ship passage to the port of Tampa. This central portion of the bridge consists of a high-level through-truss cantilever span 864 feet long, providing 800-foot horizontal navigation clearance and 141 1/2 feet of vertical clearance. The structure is symmetrical. Next to the channel span on each side is a

360-foot through-truss anchor span, followed by two simple-deck truss spans, each 289 feet 3 inches long. Next comes six 140-foot and six 100-foot deck-girder spans, giving this part of the bridge a total length of 5,621 feet. Maximum grades to the midpoint of the center span are 5 per cent. The steel spans are sup-

(Concluded on next page)

"HUSKY"
ALL-PURPOSE GRADER
DITCHER & TERRACER



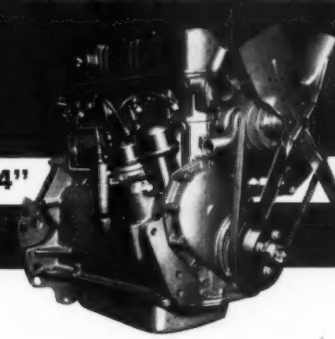
FOR FULL INFORMATION WRITE
NORTHFIELD IRON CO., P. O. Box 30-A, Northfield, Minn.



The "HUSKY" maintains roads and shoulders better at half the cost.
Finishes slopes and ditches better and faster. One man hydraulic job recommended for contractors. Guaranteed against breakage first year. Three sizes \$540 to \$1570. Will save you a lot of money.

FORD'S Heavy Duty INDUSTRIAL ENGINES

meet America's most popular power needs!



FORD "134"

4-CYL., O.H.V.

Ford's Overhead Valve Industrial Engines have been thoroughly tested and highly accepted for industrial applications in the field, and now a 4-cylinder power plant of the same type is being offered. This Ford "134" cu. inch engine incorporates notable advancements for still greater performance and operating economy. Bore: 3.4375 in. Stroke: 3.6 in. Rating (dyn.): 45 b.h.p. @ 2400 rpm.

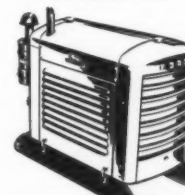
Manufacturers of powered equipment throughout the U.S.A. are constantly in search of economical power to speed productive activities and increase profits.

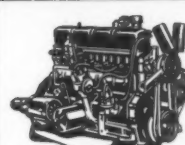
Because of its efficient mass production methods and nationwide service facilities, the Ford Motor Company is a popular source of economical, low-cost Industrial Power. Here on this page are the engines which Ford has designed and built to its famous Hi-Precision standards especially for the needs of Industry.

You'll find these Heavy Duty Engines at work today powering equipment in our vast oil fields, on our farms and in factories, around logging camps, sawmills, road building and huge construction projects.

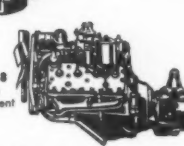
If you're interested in any of the engine series shown, one of Ford's Staff of Sales Engineers will be glad to discuss your power problem and perhaps help you solve it advantageously.

TYPICAL FORD CLOSED TYPE POWER UNIT

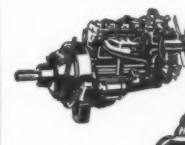





FORD "215" 6 cyl.
Industrial Engine
215 cu. in. displacement




FORD "239" V-8
Industrial Engine
239 cu. in. displacement



FORD "254" 4 cyl.
Industrial Engine
254 cu. in. displacement

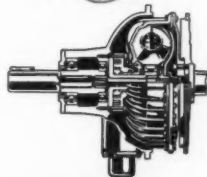


FORD "279" V-8
Industrial Engine
279 cu. in. displacement



FORD "317" V-8
Industrial Engine
317 cu. in. displacement

FORD
MULTA-TORQUE
CONVERTER



Ford
INDUSTRIAL ENGINES
AND POWER UNITS

YOUR JOB IS WELL POWERED
WHEN IT'S FORD POWERED

CLIP AND MAIL THIS HANDY COUPON TODAY!

INDUSTRIAL ENGINE DEPARTMENT
FORD MOTOR COMPANY, 15050 Woodward Ave., Highland Park 3, Michigan
We are interested in industrial power for:

(state your application)
Please send us latest literature on Ford Industrial Engines checked below:
☐ "134" 4-Cyl. ☐ "215" 6-Cyl. ☐ "239" V-8 ☐ "254" 4-Cyl.
☐ "279" V-8 ☐ "317" V-8 ☐ "MULTA-TORQUE" Converter

FIRM NAME _____ YOUR NAME _____
(Please Print)
STREET ADDRESS _____
CITY _____ ZONE _____ STATE _____

Long Causeway Has Five Bridges

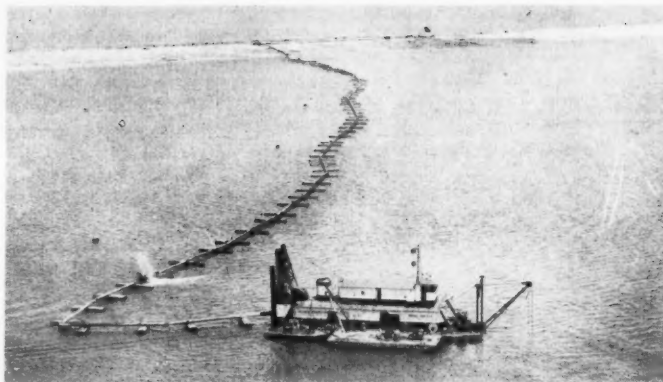
(Continued from preceding page)

ported on 32 concrete piers.

The concrete trestles total 349 spans, 48 feet long, with 122 spans on the north and 227 spans on the south side. Bents contain four 20-inch-square precast piles with every third structure a 6-pile tower bent. Caps over the piles are cast in place, but the beams or stringers are precast with prestressed concrete. The deck is poured in place.

Prestressed Beams Optional

Alternate bids were considered for these trestles, covering 36-foot cast-in-place spans; precast spans; and 48-foot precast prestressed beams with poured-in-place decks. The latter design, submitted as part of the



The dredge Sadye-M pumps hydraulic fill through a floating pipeline for the causeway embankment. Over 2,600,000 cubic yards were required for the job.

contractor's bid by The Preload Co., Inc., of New York City, was tested and approved by the consultants. It developed a saving of approximately

\$144,000, resulting from the 121 fewer bents required because of the longer spans, and the reduction in the amounts of steel and concrete

needed. Each span has six beams for stringers.

For the 3 miles plus of trestles, it was necessary to cast and prestress more than 2,000 beams—46 feet 10 inches long x 3 feet 4 inches deep; top and bottom flanges are 14 inches wide and the web thickness is 4 inches. The post-tensioning method of prestressing is used. Steel in each beam consists only of three 1-inch-diameter Stressteel bars made of high-strength alloy steel equipped with special threaded-nut end-anchorage assemblies and bearing plates. This material originated in England and its use in prestressing is known as the Lee-McCall system. The Tampa Bay bridge marks its first use in this country in linear construction.

All the special steel for this project is imported from England, but a manufacturing plant in Wilkes-Barre, Pa., will start supplying the bars and anchorages for use in this country this month. The domestic firm that has the exclusive rights to the Lee-McCall system is Stressteel Corp., of New York City.

More of Hardaway

Bridges D and E in the Hardaway contract are each 335 feet long and of the same design and construction as the trestles in C, with seven 48-foot spans to a structure. Bridge D, flanked by two sections of hydraulic fill, spans a newly dredged channel connecting with McGill Pass. Further along, the new route crosses Terra Ceia Island, then spans Terra Ceia Bay with bridge E. From the south end of the bridge a 1,390-foot embankment connects to the Florida mainland. Fills on either side of structure E are by Benton & Co.

Hardaway Contracting Co. started work in March, 1952, and is expected to finish its part of the project by Sept., 1954. The major items in this contract include the following approximate quantities:

Piers	
Class A concrete, footings	11,350 cu. yds.
Class A concrete, above footings	21,350 cu. yds.
Concrete for seals	20,422 cu. yds.
Reinforcing steel	850 tons
Steel H-piling, 12 and 14-inch	74,750 lin. ft.

Trestles	
Prestressed girder spans	17,422 lin. ft.
Reinforcing steel	250 tons
Precast-concrete piles, 20 inches square	38,200 lin. ft.
Composite piles, 20 inches square with 10-inch H beams	51,350 lin. ft.

Personnel

For Parsons, Brinckerhoff, Hall & Macdonald, Resident Engineer at the site is Peter A. Hakman. Maurice N. Quade, partner in the firm, exercises general supervision over the work.

On the Hendry Corp. contract, George H. Asbell is General Superintendent. For Hardaway Contracting Co., D. M. Plyler is Project Manager; Art Goodale, General Superintendent; Ralph Bird, Superintendent at the casting yard; and Karl Mullis, Superintendent on the floating concrete plant. A. D. Vick is Superintendent for The Preload Construction Corp.

The State Road Department of Florida is headed by Richard Simpson, Chairman; Sam P. Turnbull is State Highway Engineer; W. E. Dean, Engineer of Bridges and J. M. Watson, Engineer of Construction.

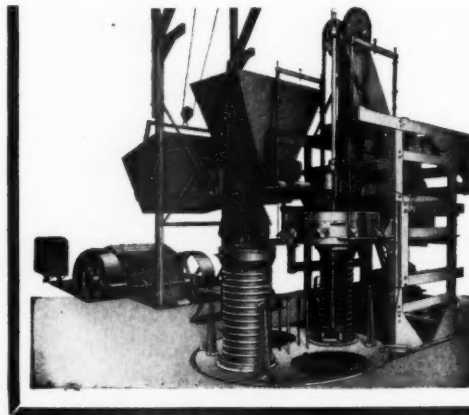
Help your local collection of warm clothing for Korea. The national goal is six million pounds.

CONTRACTORS AND ENGINEERS

YOU CAN'T MATCH McCRACKEN FOR CONCRETE PIPE PRODUCTION

- 1) Doubles production in all sizes 4" to 36".
- 2) Handles 90% of suburban market — 80% of metropolitan market.
- 3) Does twice the business with half the inventory.
- 4) Makes all the sizes in which machine-made production and fixed-plant operation offer any real economy.
- 5) Produces quality pipe to meet all requirements with liberal margin of safety.
- 6) Reduces cost from 50% to 10% — 50% on the 6" size down to 10% on the 36" size.
- 7) A wide range of sizes with lowest costs in every size it makes.
- 8) More resales — you can't sell a lemon to the same man twice.

WRITE FOR COMPLETE INFORMATION



MODEL "T"—4" to 36"; MODEL "R"—4" to 18"; MODEL "D" for Drain Tiles—sizes 4" to 16"

Eastern Representative
Harry E. Amar
211 East 149th Street
New York 51, N. Y.

Central & South American Agent
George W. Hoffmann
Apartado Postal 1173
Mexico, D. F.

MAIN OFFICE AND FACTORY

CONCRETE PIPE MACHINERY CO.
SIOUX CITY, IOWA

BLACKHAWK A LOW COST, MOBILE VERSATILE, TRENCHER *Trench Hog*

A Ford or Ferguson tractor mounted, versatile, small trencher with big trencher performance, digs up to 800' per hour, with wide range of depths and widths—up to 7' deep, 20" wide. One man and a Trench Hog do the work of 40 hand laborers. Ideal for builders, plumbers, electrical contractors, utilities, municipalities and pipeline contractors.

- Depths accurately controlled, hydraulically.
- Cutters furnished in 6" to 20" widths. Easily changed to suit the job. Special cutters for tough soils and frozen ground.
- Optional equipment includes one side dirt delivery attachment to deposit spoil on either right or left side of trench.
- Crumbers available to provide clean, smooth, accurate trench bottom.
- Choice of 7 digging speeds.
- Independent wheel control for straighter line trenching and turning corners.
- Boom raises upward about 90° for transport.
- 4' bulldozer available for backfilling.

THOUSANDS IN USE—EVERYWHERE



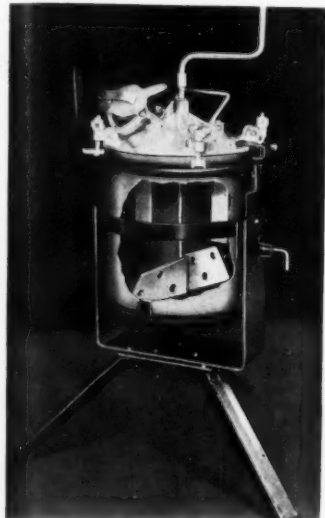
ARPS
CORPORATION

Dept. C, NEW HOLSTEIN, WIS.

PRODUCTS FOR BETTER FARMS,
BETTER INDUSTRIES SINCE 1920

Manual Paint Mixer

A hand-operated paint mixer to fit the standard 5-gallon container is manufactured by Marien Metal Products Co., Inc., 1220 E. Nine Mile Road, Hazel Park, Mich. The Prop Professional clamps to the pail head



and its blades scrape the bottom. The blades can be raised the full height of the pail.

Another model, the Industrial, has a cast-aluminum cover with a spout and a neoprene gasket. A combination cradle-dispenser for the can is also available.

For further information write to the company, or use the Request Card at page 18. Circle No. 860.

Motorola Personnel News

L. Harriss Robinson, formerly Manager of Region 7 of Motorola Communications & Electronics, Inc., Chicago, Ill., is the new Manager of the company's Washington, D. C., office. The position has been created as a result of increased Government requirements for mobile-radio, power-line-carrier, supervisory-control and microwave-communications equipment.

John Fussell, formerly Assistant

Contractors save money on curb form costs with Pacific Clamps



On all curb, curb and gutter, integral curb and similar jobs, Pacific all-steel Clamps — used in combination with wood forms — reduce nailing to a minimum, eliminate cost of wood stakes, and save on labor costs. These simple, adjustable clamps require only one carpenter and one laborer to set up any job — without need for special tools. Wood forms last longer. No stakes driven through concrete.

One set of forms handles any job from 4" to 10" curb width, batter from vertical to any angle, and for any height up to 36".

Write for Bulletin C and prices.

PACIFIC ENGINEERING SALES CO.

3938 Wilshire Blvd., Room 201
Los Angeles 5, California

APRIL, 1953

Regional Manager, succeeds Mr. Robinson as Manager of Region 7. He will be in charge of sales and distribution of Motorola communication products to Delaware, Maryland, Virginia, West Virginia, North Carolina, and the District of Columbia.

Surveying Instruments

A folder on surveying instruments shows various models of transit and includes a theodolite, a tachymeter, and a number of levels. A 5 1/8-inch contractor's transit and a tachymeter for quickly reading distances and differences of elevation simultaneously are among the instruments described. The booklet also shows a combination level-transit.

To obtain this literature write to the Fennel Instrument Corp. of America, 478 Water St., New York 2, N. Y., or use the Request Card at page 18. Circle No. 831.



Ejector extensions, such as the one shown on this Caterpillar No. 21 scraper, are now available from Caterpillar Tractor Co., Peoria, Ill., on five models of scrapers, the No. 20, No. 21, No. 70, No. 80, and No. 15. The extensions are designed to reduce spillage and loading time. For further information write to the company, or use the Request Card at page 18. Circle No. 742.



NEW "TELESCOPIC HOIST" TRAILERS ADD UP TO 2000 LBS. PLUS TO YOUR LEGAL PAYLOAD!

Lighter, Heavy-duty Construction With Best Weight Distribution

New Hercules Twin Telescopic Hoists eliminate a lot of deadweight from the trailer because they lift over the fifth wheel, letting the truck-tractor help support the dumping operation. Lifting capacity is greater too, and loads are hoisted with considerably lower oil pressure than normally required.

Don't haul iron in your gravel, sand or coal payload. Hoist, body, and trailer are each designed for more strength with less weight, and for record-breaking performance when the three are combined as a unit in heaviest duty service. These trailer packages are available in standard 20 ft.—20 yd. tandem axle models and 17 ft.—17 yd. single axle models. Other lengths and capacities on request.



Ask your nearby Hercules Distributor, or write the factory direct, for complete information on the new Telescopic Hoists. They're just one of the many reasons why users of truck, tractor, spreader, and contractor's equipment everywhere are saying—THE BIG NEWS IS HERCULES.



Profitable Distributor Franchises for various types of Hercules equipment are available in some areas. Investigate now.

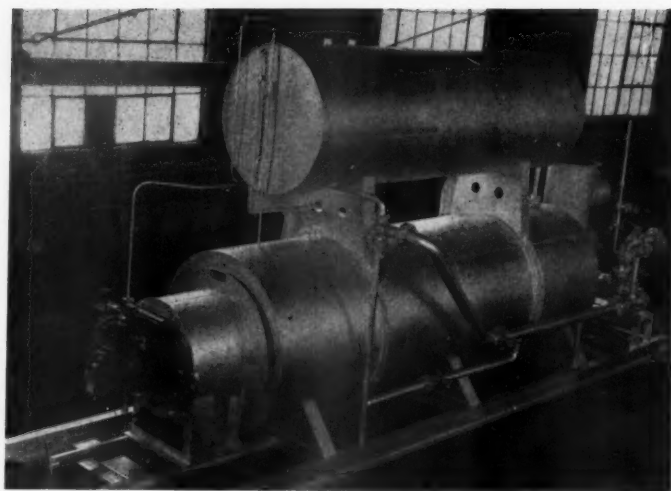
HERCULES STEEL PRODUCTS CORPORATION • GALION, OHIO

Hot-Oil Heater System For Asphalt Plants

A hot-oil heater system for asphalt plants is offered by the Hot Oil Heater Co., Inc., 246 Walnut St., Newtonville 60, Mass.

The heater is a steel-built non-pressure heat generator through which a mineral heat-transfer oil flows and is circulated to various parts of the plant. Models are made covering temperatures ranging between 212 degrees F and 450 degrees F. The smallest sizes, 1,500,000 Btu per hour and less, are shipped ready for insulation and connection to service and utility lines.

The unit consists of an all-steel heat exchanger, an expansion-seal tank, valves, circulators, fuel burner, and controls. The advantages pointed out by the manufacturer for the hot-oil system include accurately controlled heating cycles, low invest-



ment, safety, simplicity, and increased plant capacity.

For further information write to

the company, or use the Request Card that is bound in at page 18. Circle No. 820.

Heil Equipment in Movie

The Heiliner scraper and bottom-dump wagon may be seen in action and in color in a new 16-mm sound film recently released by The Heil Co., Milwaukee, Wis. Job shots show the high-speed earth-moving units (18-cubic-yard Model 2C800 and 15-cubic-yard Model 2C500 Heiliners) at work in different types of material, and scenes made at the Heil test grounds show the operating qualities of this equipment.

The movie is 400 feet long and runs for 12 minutes. It is available to contractors, mine operators, and interested industrial firms, from district sales offices of Heil and Heiliner distributors. Educational institutions may request the film through The Heil Co., Road Machinery Division, Milwaukee 1, Wis.

Is your equipment ready for Spring?

*First Word
in Comfort,
Protection...
Long Wear*

GOODALL
Waterproof
CLOTHING • FOOTWEAR



COATS • JACKETS • OVERALLS

A wide selection of styles, in rubber, oiled and latex-coated . . . for reliable wet-work and wet-weather protection above ground or below. Every garment made to specifications that assure long, economical wear, with maximum comfort. Reinforced where extra strength is required, without impairing complete freedom of movement. Style 338 Coat is the Contractor's favorite. Style 80 Jacket with Style 81 Overall makes the ideal shaft unit.

"TOE-SAVER"® BOOTS

First-quality black rubber boots with features that provide the ultimate in durability, comfort and safety. The famous "Toe-Saver" Safety Toe Cap withstands 2,000 lbs. pressure per square inch. Made with white bumper tip for positive identification. Short, three-quarter and full hip lengths. Slip-resistant Grid Tread soles.

Note: These boots, as well as "Wear King" and "Goodall" brands, now have sizes marked so they won't wear off.



OTHER BOOTS • PACS • SHOES

"Wear King" Boots — same quality as "Toe Saver", but without Safety Toe feature. Regular, Top-Lace and Terra Haute Pacs. Work shoes, arctics and rubbers.

The Goodall Quality Line also includes Body Boots, Mucker Boots, Glass "Hardboiled" Safety Hats and Work Gloves. Contact our nearest branch for details and prices.



GOODALL RUBBER COMPANY

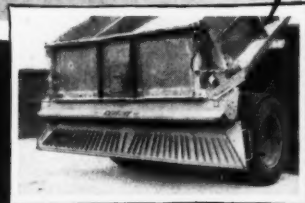
GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.
Branches: Philadelphia • New York • Boston • Pittsburgh • Chicago • Detroit • St. Paul • Los Angeles
San Francisco • Seattle • Portland • Salt Lake City • Denver • Houston • Distributors in Other Principal Cities
Goodall Rubber Company of Canada, Ltd., Toronto.

SENECA PETROLEUM CO., Inc.

Standardizes on
**CENTURY
SEAL COAT
UNITS** for
Entire Fleet!



Note clean, sharp margins. Many use CENTURY to lay shoulder ballast, too.



Flow channels carefully calibrated and positioned for even, uniform aggregate distribution.

Five years ago Seneca Petroleum, Chicago, Ill., one of Midwest's largest asphalt construction contractors, bought their first CENTURY SEAL COAT Unit. Today every truck Seneca operates is CENTURY equipped!

Why? Because the CENTURY is operated by *only one man* — the driver is your entire crew! Spread and shut-off are hydraulically controlled by push-button in the truck cab. That saving alone can pay back your investment in less than a season.

The CENTURY always provides an accurate, metered, sharp, clean-margined mat. No extra labor to clean up misplaced or surplus material . . . Width of spread from 20 inches to 10 feet. Equally efficient when truck is in forward or reverse.

Remove the CENTURY in 5 minutes — if you wish — but — the CENTURY need never be taken off. It does not interfere with the truck's other work. You'll cut costs, save labor, get the job done faster — with a CENTURY.

Send a post card — or use the convenient coupon below — for complete information, prices and specifications. Write today!

CENTURY SPREADERS • HYDRAULIC PUMPS • HYDRAULIC MOTORS AND VALVES

CENTURY ENGINEERING CO.
WAUKESHA, WISCONSIN

Please rush complete information, prices and specifications for the CENTURY SEAL COAT unit.

Name.....

Organization.....

Street..... Zone..... State.....

**CENTURY
ENGINEERING
COMPANY**

WAUKESHA, WISCONSIN

CONTRACTORS AND ENGINEERS



This telescoping 2-piece hose reduces dust hazard.

Reduces Dust Hazard

A two-piece telescoping rubber hose which carries discharge fines from a quarry's primary crusher to the surge pile is made by Thermoid Co., 400 Whitehead Rd., Trenton, N. J. As the height of the pile—often 45 feet below the discharge chute—varies, cables raise or lower the hose.

The hose is constructed like suction dredge hose. One 25-foot section of 7½ inches OD, is attached to the bottom of the discharge chute. Another section 20 feet long fits around the outside of the smaller section and has a flange at the bottom.

For further information write to the company, or use the Request Card at page 18. Circle No. 734.

Air-Powered Saw

An air-powered saw is the subject of a folder from Wright Power Saw & Tool Corp., 292 Longbrook Ave., Stratford, Conn. The saw has twin interlocked reciprocating sawblades. According to the manufacturer, it cuts 6x8-inch timbers in 17 to 23 seconds at 90-pound pressure and 12 x 12's in 50 to 70 seconds. Construction details and specifications of the saw are included in the booklet.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 744.

DUDGEON HYDRAULIC JACKS

SALES RENTALS

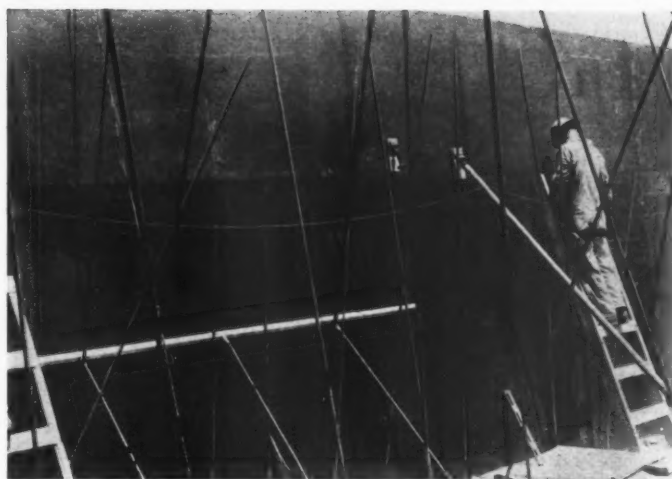
FOR: PILE TESTING, UNDER-PINNING, BRIDGES, PIPE PUSHING, SOIL TESTING

RICHARD DUDGEON INC.
789 BERGEN STREET BROOKLYN, N. Y.
• ST 9-4040 •

Data on Wood-Fiber Panel

A booklet on a wood panel that is used as a form liner or structural form board is announced by the Masonite Corp., 111 W. Washington St., Chicago 2, Ill. Presdwood is suitable for interior or exterior use in construction of beams, girders, slabs, walls, columns, foundations, and arches. It is said to give a smooth concrete surface without disfiguration. Board sizes are 4x8 feet and 4x12 feet. Thicknesses available are ¾ and 1¼ inch. The specific gravity of the material is said to be greater than that of northern hard maple.

The manufacturer points out that the large panels used as form boards improve hydration of concrete by maintaining the established water-to-cement ratio. There are fewer cracks or joints for moisture to seep through and the board is said to absorb little.



The inner surface of a form at Bull Shoals Dam was faced with Presdwood.

sorb little.

the company, or use the Request

Card at page 18. Circle No. 711.

compact heavier lifts

with fewer passes

Southwest COMPACTION ROLLER

ON THE BIG JOBS use the Southwest Compaction Roller to keep pace with speedy, 24-hour job schedules and bigger earthmoving equipment. It compacts heavier lifts with fewer passes. Weight-box units oscillate up and down independently to provide a constant compaction weight on each tire regardless of ground contours. There is no bridging, no shifting of load.

The Southwest Roller has flexibility to suit varying job requirements. Weight-boxes may be filled with wet or dry sand, earth, scrap or other materials. Sectionalized hauling yoke permits use of any combination from 3 to 6 weight-box units. Sizes and capacities range from 10 to 200 tons, suitable for light, medium or heavy duty compacting of earth.

Greater Oscillation

Each wheel of the Southwest Compaction Roller is mounted in an independent weight-box unit. Hinge point of wheel is at extreme rear of its own weight-box. Closely spaced wheels give maximum compaction with as much as 12" variance in height. Offers oscillating freedom and greater compaction on uneven ground

Type Soil	Symbol	No of Single Passes	% Moist	FIELD		% Moist	Dry Density	Ratio
				Actual	Corrected		Pass #4	Des.-Opt. -Pass #4
Silty Sand	SM	6	7.3	128.0		8.0	133.6	96.0
Sandy Clay	CL	6	10.2	110.0		15.3	116.2	95.5
Sandy Clay	CL	6	14.3	114.0		15.3	116.2	98.0
Sandy Silt	ML	6	14.6	115.0		14.2	120.8	92.0
Clayey Sand	SC	6	9.2	125.2		10.2	128.3	97.8
Silt	ML	6	6.6	119.0		9.5	125.0	95.0
D.G.	SW	6	8.7	126.7		9.2	132.0	96.0
D.G.	SW	6	5.2	129.0		7.8	135.0	96.0
Straight Clay	CL	6	6.3	122.8		10.3	127.1	96.6
Pit Run	GW	6	4.8	133.5	126.5	7.7	134.5	95.0

The above data on unit weight of soil samples has been taken from average compacted fills placed in lifts from six to twelve inches as specified. The unit weight per pneumatic wheel load being 35,000 lbs.

WRITE TODAY for illustrated folder which gives complete data and specifications.



CONSTRUCTION MACHINERY DIVISION
Southwest Welding & Manufacturing Co.
Alhambra, California

HAULING SCOOPS BULLDOZERS LOADERS BOTTOM DUMP WAGONS RIPPERS TAMPERS SCRAPERS TREE DOZERS



Setting up Outside Form of Battered Wall, James Leck, Minneapolis, General Contractor

Symons Forms for Battered Walls

Battered walls are constructed similar to vertical walls, the only difference being a variation in tie lengths. Ties are placed when inside form is erected . . . outside wall is locked to ties with the same connecting bolts and wedges that bind panels together.

Send plans for your next job and get complete layout and cost sheet—no obligation. Symons Clamp & Mfg. Co. 4251 D-3 Diversey Avenue, Chicago 39, Illinois.

A profitable tool
with many uses!

BARCO Gasoline HAMMER

ONE MAN OPERATION!
NO COMPRESSOR NEEDED

HERE'S why owners of the improved Barco Gasoline Hammer are enthusiastically acclaiming it as "A Profitable Tool With Many Uses!"

- New ignition system—quick, easy starting; trouble-free.
- Quick cable disconnect at handle. New handle design; switch convenient to operator's thumb.
- More portable than ever! Easily taken to any location by car, truck, or light plane.
- Versatile! A handy tool for Pavement Breaking . . . Cutting . . . Digging . . . Rock Drilling . . . Frost Breaking . . . Rod Driving. Ideal for general utility, standby, and emergency service.
- Economical! Low first cost, low operating expense, low maintenance expense. Quickly pays for itself.
- Powerful, rugged. Up to 1550 strokes per minute.

ASK FOR A DEMONSTRATION — See for yourself — ask for our nearest distributor to give you a demonstration.

Send for a copy of this interesting new Bulletin No. 613 — "BARCO GASOLINE HAMMERS".



BARCO
Manufacturing Co.

518E Hough St., Barrington, Illinois
A Chicago Suburb

GASOLINE HAMMERS AND RAMMERS

38

New Hospital Has Latest Facilities

Completely Air-Conditioned Concrete-and-Brick Structure Is Supported on 1,087 Untreated Timber Piles

● A COMPLETELY air-conditioned 219-bed hospital with all latest laboratory facilities has been built in New Orleans, La., for the Sisters of Mercy. The 5-story reinforced-concrete structure consists of a 330-

floor at the front of the building and jut out in a quarter arc at the intersection of the main building and the rear wing. White-stone lintels, sills, and frames also add architectural interest.



Bricklayers working on the hospital in New Orleans, La., make extensive use of Patent hanging masonry scaffolds.

C. & E. Photo

foot-long x 50-foot-wide main building facing the intersection of two streets. A rear wing is 175 feet long and 50 feet wide. The facade is stone-faced and the remainder faced with multicolored brick.

Cantilevered Balconies

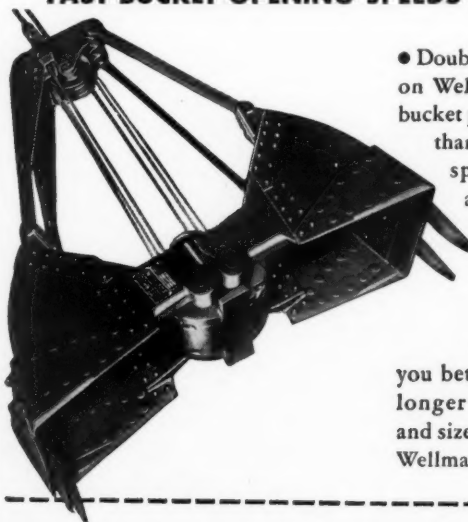
One of the main architectural features is the concrete cantilevered balconies. They run along every

Farnsworth & Chambers, Houston, Texas, moved in on the \$3,500,000 job in August, 1951. The New Orleans soil provided poor road conditions and dead-reef shells from nearby Lake Ponchartrain had to be brought in to strengthen the subgrade.

Pile Driving

Typical of most of the Mississippi

WELLMAN Williams Type FAST BUCKET OPENING SPEEDS OPERATIONS



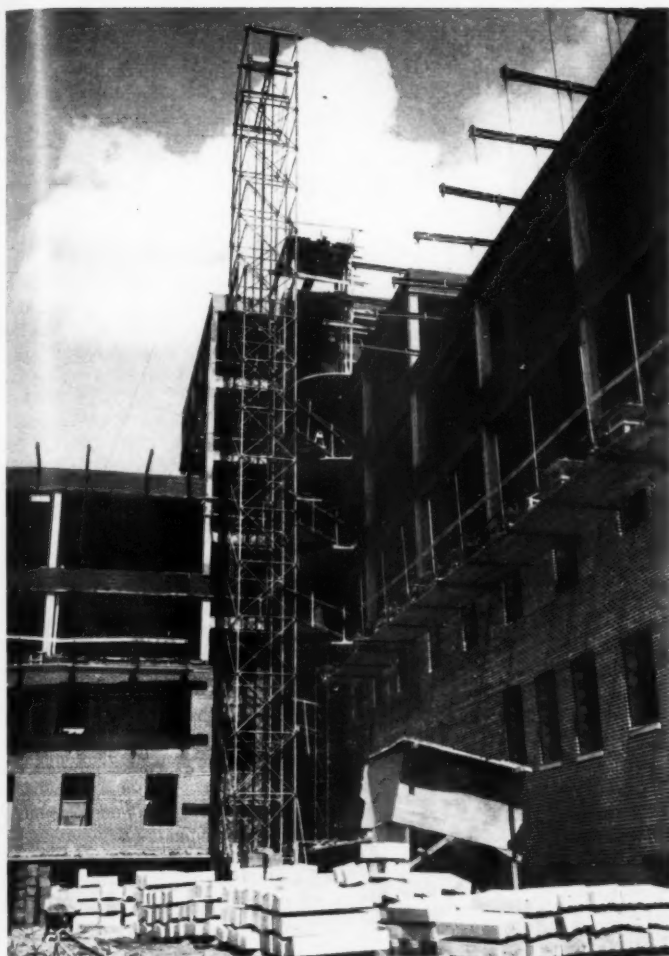
- Double-hinge construction on Wellman's multiple-rope bucket permits faster opening than a single hinge. This speeds up operations, also gives a bigger spread in the open bucket for the same headroom.

Wellman's welded-design buckets offer you better performance and longer service. In all types and sizes you'll do better with Wellman!

Want Facts? THE WELLMAN ENGINEERING COMPANY
7000 Central Avenue
Cleveland 4, Ohio

Write for free descriptive bulletins.
CLAMSHELL • DRAGLINE • CUSTOM-BUILT
BUCKETS • STONE AND WOOD GRABS

CONTRACTORS AND ENGINEERS



A 100-foot Archer double tower with American hoist handled materials. C. & E. Photo

silt area, the ground will not support a structure unless it is set on piles. The Mercy Hospital required 1,087 of them, mostly untreated. All were driven to about 52 feet below ground level before any excavation started. When the pile was driven to ground level, a follower pile was put in to send the original down another 10 to 15 feet. This method simplified both the driving and later the excavation.

A turntable rig with 75-foot leads

and a No. 1 Vulcan hammer drove all the piles. It was powered by a 60-hp Clyde oil-fired boiler. The rig drove about 50 piles per day.

Stumps Were a Problem

Pile driving and excavation brought out an interesting problem for the contractor. The job site had originally been a filled-in cypress swamp. When the cypress was first cleared, the stumps had been too

(Concluded on next page)

Between job MAGIC CARPET for slow travelers



MILLER Model "B" Tilt-Top!

Time saved between jobs means more profit on every job. One man can load heavy units in less than two minutes. Operator drives unit on platform—it tilts, locks . . . and he's on his way with no lost motion. You'll find MILLER Tilt-Top the extra trailer for extra production.

MILLER Tilt-Top saves even more time than other more cumbersome trailers with its better maneuverability, and easier backing. Best of all, MILLER'S exclusive mass production of Tilt-Top trailers cuts original cost for you. Get this extra help . . . extra production now — see your MILLER dealer today!

MILLER  **research engineers**
Trade mark reg.

Dept. C-4, 456 So. 92nd Street, Milwaukee 14, Wis.

**handier
easy-to-back
priced right**

Model "B" 10 ton \$1175
Optional equipment (priced extra)
16' long platform (8'x14' standard),
hydraulic tilt control, 2 speed
hand winch and electric brakes.

White Heating Kettles Have Fire-Proof Tops

Cut-back and highly inflammable road repair material can be heated safely in White kettles. FIRE-PROOF top reduces fire hazard.

White asphalt and tar kettles are extensively used. They give long life and satisfaction.

Plain kettles or with hand or engine driven spray pumps for patching pavement. Thermometer, barrel hoist, warming hood extra. All oil burning. Semi-elliptic springs, pneumatic tires.

65, 110, 165, 220, 300-gallon capacities.

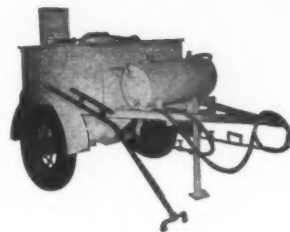
Model F-10 is oil jacketed, to heat elastic joint filler.

Write for Circulars
and name of nearest dealer

White Mfg. Co.

ELKHART 9

INDIANA



Other Products

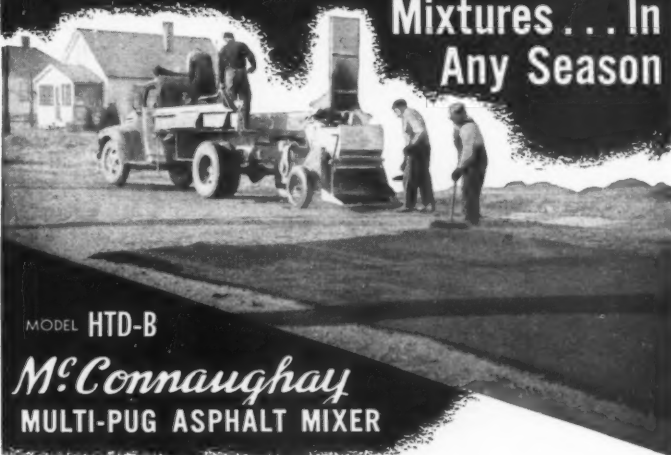
CONCRETE VIBRATORS
Gasoline Engine and
Electric Motor Driven Models

ASPHALT PLANTS
Portable—Stationary

FRONT END LOADERS
for Industrial Tractors

KEROSENE TORCHES
3 to 20-gal. capacities

For Hot or Cold Patching Mixtures . . . In Any Season



MODEL HTD-B

McConnaughay
MULTI-PUG ASPHALT MIXER

Here's exactly what you need for quick, economical pavement repairs and small surfacing jobs . . . in any season . . . under wet or dry conditions. It's the McConnaughay HTD-B Mixer, precisely engineered and rigidly constructed to handle on-the-job mixtures of asphaltic concrete, sheet asphalt, sand asphalt or mastic asphalt . . . hot or cold . . . at remarkably high rates. It will enable you to meet all conditions with least effort and at lowest possible costs the year 'round. Write, wire or 'phone today for details and specifications.

**No Other Machine Can Do
ALL These Things!**

Reactivate and heat stock pile mixture—up to 10 tons per hour.

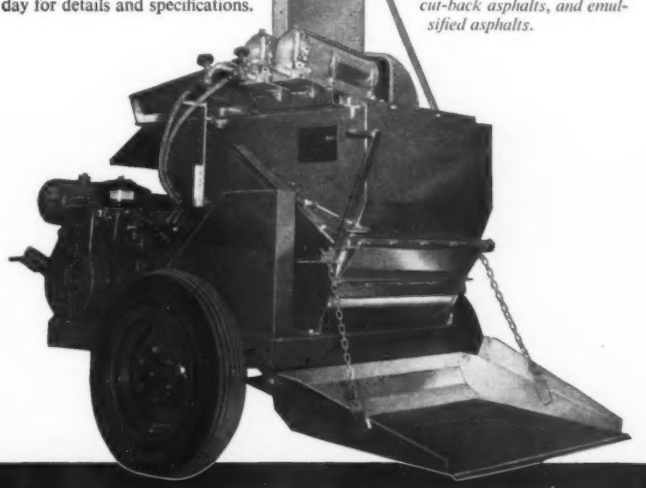
Prepare cold asphaltic mixtures—up to 10 tons per hour.

Prepare hot asphaltic mixtures—up to 5 tons per hour.

Dry various types of wet aggregates quickly, thoroughly.

Remove both moisture and solvents from bituminous mixtures.

Produce bituminous mixtures with tars, paving asphalts, cut-back asphalts, and emulsified asphalts.



K. E. McCONNAUGHAY
LAFAYETTE 3, INDIANA

New Hospital Has Latest Facilities

(Continued from preceding page)

large to move, and therefore were simply covered over.

Naturally, the piles were driven right through the big stumps. When the $\frac{3}{4}$ -yard Koehring dragline began to excavate, the contractor found that stumps up to 6 feet in diameter had to be pulled out. The larger ones were chopped up and dragged out with winch and cable. Down at pile-cap level, one stump had 13 piles driven through it. Hand axes were the only implements that would get the heavy watersoaked wood out of the way.

After some 18,000 yards of earth had been excavated, the piles were cut off with a Homelite one-man saw. Two inches of sand, gravel, and cement was laid to dry the bottom.

Concrete Pouring

After the pile caps and footings were in, the 13-inch walls were poured in Universal forms. A 5-inch ledge was left for brick. The 2,500-pound concrete was water-proofed with Pozzolith.

Southwest metal pans were used on the deck pours. Beams were formed by shiplay and Universal snap-in ties. Acrow jacks shored up the interior beam bottoms and job-made wooden T-shores supported the spandrel beams during and after pouring. Forms were re-used up to 12 times. All concrete was transit-mix and was poured with a Koehring crane and a Gar-Bro $\frac{1}{2}$ -yard bottom-dump bucket. The crane used a 60-foot boom and a 20-foot jib. Top pour in one day was 147 yards on the third floor deck.

Hanging Masonry Scaffold

Probably the most striking construction feature was the extensive use of Patent hanging masonry scaffolds. Steel outriggers projected from the top floors around the complete periphery of the building. This kept brick rising uniformly on all parts of the building and permitted bricklayers to work in a shady section during most of the day.

Mortar and materials were sent to the various floors in a 100-foot Archer double tower. The American hoist had a Buda gasoline engine.

The interior walls are finished with backup tile, and the 2½-inch interior partitions are metal lath and plaster. The height to the suspended ceiling is 9 feet. The roof consists of Foamglas insulating blocks and built-up roofing. Expansion joints are built into the main structure 75 feet from each end.

Personnel

The hospital was designed by the

architectural firm of Favrot, Reed, Mathes & Bergman, New Orleans, La.; William Slavin was Construction Superintendent for Farnsworth & Chambers Construction Co., Inc., the general contractor.

Civil Defense Awards

A series of awards for outstanding plant-protection programs in the state has been inaugurated by the New York State Civil Defense Commission. International Business Machine Corp., Endicott, N. Y., is the first to receive such a presentation. This took the form of a white flag overprinted with the large red letters, "Awarded for Plant Protection" and the familiar Civil Defense insignia. Along with this banner, a citation, suitable for framing, was included as part of the award.

C. R. Hueber, Director of the Commission, has urged all other plants in the state to qualify for the award by enrolling and training CD workers in a plant-protection program, and to urge workers to volunteer for CD services in their local communities. Gen. Hueber says that adequate safety measures for a plant must include organization and planning for protection of the employees and the establishment, including essential machinery and equipment. The personnel must know their responsibilities, and there must be installed warning devices, shelters, and emergency supplies and equipment.

A. C. M. Azoy, Administrative Assistant to Gen. Hueber, is in charge of the state-wide program.

American Cyanamid V. P.

L. C. Perkins has been promoted Vice President of American Cyanamid Co., New York, N. Y. In 1945 he became Treasurer of the company, and a director in 1946.

G. C. Walker succeeds Mr. Perkins as Treasurer. He joined Cyanamid in 1933, and since 1951 has been Assistant Treasurer.

"HYDRA-HAMMER" Meets Every Challenge With Spectacular CONTROLLED Hydraulic Power



Tough jobs like this point up the superiority of OTTAWA'S amazing HYDRA-HAMMER. Here a HYDRA-HAMMER, owned and operated by the Dugdale Construction Company, is breaking pavement on the site of Omaha, Nebraska's, new Municipal Auditorium. Four city blocks must be broken up and thousands of feet of underground utilities rerouted before excavation for the building can begin. HYDRA-HAMMER here is trenching for 20,623 feet of telephone cable duct—and is beating the time deadline despite heavy traffic. That's the kind of result you, too, can count on when you choose OTTAWA'S HYDRA-HAMMER for your tough jobs.

Unparalleled in Performance! Unparalleled in Service!

Ottawa

Write today for descriptive booklet. See how YOU can reap profits from the mighty OTTAWA HYDRA-HAMMER!

OTTAWA STEEL PRODUCTS, INC.
OTTAWA, KANSAS

CONCRETE BREAKER-BACKFILL TAMPER

1. Jobs Are Faster, Easier, More Economical . . . with OTTAWA'S revolutionary self-propelled HYDRA-HAMMER operated by only one man!
2. SAVINGS UP TO 50% . . . as adapting tools allow the HYDRA-HAMMER to make quick, easy work of such operations as backfill tamping, concrete breaking, asphalt cutting, post driving or filling, rock tamping, ice chipping and many others.
3. Operates from 0 M.P.H. Up . . . with an infinite variety of creep speeds. Road speed 18 M.P.H. Powered by a 23 horsepower Wisconsin gasoline engine working with a Thomas hydraulic clutch drive and a Warner transmission.
4. EASY TO OPERATE No skilled operators needed for this multi-purpose, self-propelled tool . . . any man able to drive a truck can learn to operate the HYDRA-HAMMER in an hour. The main hammer falls free, eliminating shock and high maintenance costs.
5. SELF-PROPELLED This feature of the HYDRA-HAMMER enables it to get from job to job under its own power . . . no extra equipment or manpower such as tow truck and driver needed.



Simple ACCURATE Dependable
cenco
ENTRAINED AIR INDICATOR

This device measures the percentage of air entrained in fresh concrete mixtures. Provides a simple, accurate determination by the pressure method as developed in the laboratories of the Portland Cement Association. Meets requirements of ASTM standard method C-231. Equipment includes all accessories needed for test.

cenco Light weight—portable. Ask for circular No. 1212C

CENTRAL SCIENTIFIC COMPANY
3700 IRVING PARK ROAD • CHICAGO 13, ILL.
CHICAGO NEWARK BOSTON WASHINGTON DETROIT SAN FRANCISCO
MINNEAPOLIS LOS ANGELES TORONTO MONTREAL VANCOUVER OTTAWA

Railway Supply Company • Tube • Hoses

CONTRACTORS AND ENGINEERS

t, Reed,
Orleans,
onstruc-
nsworth
Co., Inc.,

s
standing
in the
by the
se Com-
ess Ma-
., is the
entation.
white flag
red let-
tection"
ense in-
anner, a
ng, was
ard.

of the
ll other
y for the
ning CD
ion pro-
o volun-
eir local
says that
r a plant
nd plan-
employees
ncluding
uipment.
their re-
must be
shelters,
d equip-

istrative
t, is in
ogram.

V. P.
promoted
Cyana-
1945 he
company,

r. Perk-
e joined
nce 1951
rer.

le
ATE
able

CO

OR

measures
age of air
ures. Pro-
mination
loped in
Cement
of ASTM
ment in-
for test.

ble.

o. 1212C

MPANY

12, 111011

COVOUR 1970

ENGINEERS

Asphalt Plant Gets Gradation-Control Unit

A new gradation-control unit for the Barber-Greene 20 to 35-ton-per-hour Model 840 asphalt plant, provides 3 or 4-bin screening and separation of the aggregate after drying.

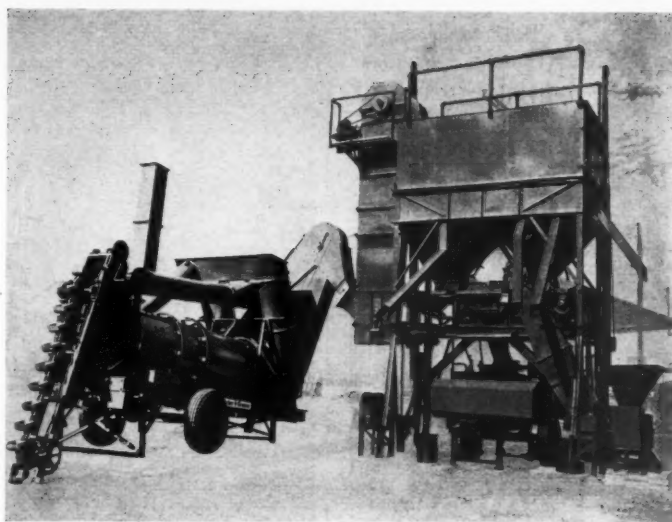
Plants so equipped can meet specifications which require screening and separation of aggregates into as many as four different sizes, after drying. Conversion kits are available to adapt mixers already in use for operation with the gradation-control unit.

The Model 864, a tower-type gradation unit, that operates above the mixer, receives the aggregate via an enclosed bucket elevator from the dryer. After separation, the sized aggregates are stored in separate bins and fed directly into the mixer by means of an apron feeder. This feeder is mechanically interlocked with the bitumen pump on the mixer. When the ratios of the various sizes of aggregate and the bitumen have been established, both the feeder and the pump are locked to give constant proportion and quality in the mix. Provisions have been made for sampling and calibration for accuracy. The screens and elevator from the dryer are driven by an electric motor. The gradation-unit feeder is driven by a power takeoff on the mixer.

A model mounted on a rubber-tired chassis, the 863, is identical in operation with Model 864, although it can be towed behind a truck for moving from job to job. Both models are normally equipped for 3-bin separation, but can be adapted to a 4-bin setup by adding an auxiliary fourth bin.

Among accessory units available for both models are: fines feeders for adding fines, dust, or mineral fillers where required by mix specifications, and folding truck-loading conveyors that need not be removed for transport.

For further information write to the Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 828.



The Barber-Greene Model 864 gradation-control unit, in conjunction with the Model 840 mixer, provides 3 or 4-bin separation and screening of aggregates after drying.

They're Here!

GREATEST FORD TRUCKS EVER BUILT!

For faster handling on any job, Ford Trucks have new, shorter turning. New, wide-track, set-back front axle provides sharper turning angle—easier maneuvering and parking.



Fifty Years Forward on the American Road!



Deluxe cab illustrated.

Completely New for '53 FORD ECONOMY TRUCKS

NEW TIMESAVING FEATURES GET JOBS DONE FAST!

Ford Economy Trucks for '53 are completely new from the tires up! New cabs, new chassis, new power, new transmissions... every inch specifically designed to provide fast, economical transportation. New Ford Truck timesaving features GET JOBS DONE FAST... at still lower cost per mile!

NEW "DRIVERIZED" CABS cut driver fatigue!



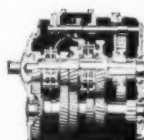
New one-piece curved windshield, 55% bigger! Wider seat, with new shock absorber. Larger door opening, push-button handles.

NEW LOW-FRICTION POWER! Choice of 5 engines... V-8 or Six!



Overhead valve, 101-h.p. Cost Clipper Six, 145- and 155-h.p. Cargo King V-8's—cut down on friction power waste, save gasoline. Also, 106-h.p. Truck V-8 and 112-h.p. Big Six.

NEW TRANSMISSIONS... widest choice in truck history!



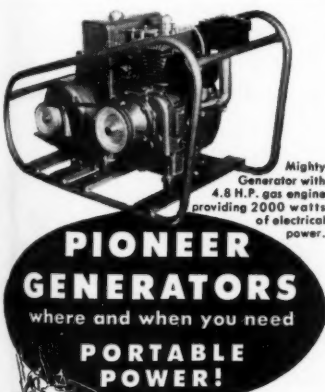
Synchro-Silent transmission on all models at no extra cost. Steering post shift on 3-speed transmissions. New Fordomatic Drive or Overdrive now available on all 1/2-tonners at extra cost.

4 COMPLETELY NEW LINES over 190 completely new models!

9 Conventional F-Series. Up to 27,000 lbs. G.V.W.; 55,000 lbs. G.C.W. Pick-up, Panel, Express, Stake bodies.
4 Cab Forward C-Series. Up to 23,000 lbs. G.V.W. Up to 48,000 G.C.W.
2 Parcel Delivery P-Series. Bodies up to 12 1/2 ft. Up to 14,000 lbs. G.V.W.
4 School Bus B-Series. For up to 60-pass. bodies. Up to 20,000 lbs. G.V.W.

FREE! MAIL THIS COUPON NOW!

FORD Division of FORD MOTOR COMPANY
P.O. Box 658, Dearborn, Michigan
Please send me without charge or obligation, complete details on new Ford Economy Trucks for '53!
FULL LINE ☐ HEAVY-DUTY MODELS ☐
LIGHT MODELS ☐ BIG JOB MODELS ☐
PARCEL DELIVERY ☐ CAB FORWARD MODELS ☐
Name _____ (PLEASE PRINT PLAINLY)
Address _____
City _____ State _____
T-10 Check here if student ☐



PIONEER GENERATORS
where and when you need PORTABLE POWER!
Pioneer Generators with gasoline engines give quick, portable power and light for your every day needs. Experience of 20 years in building outstanding generators prove that PIONEER Generators are properly engineered, and ruggedly constructed. Priced economically. Write today for illustrated catalogs and prices on 500 to 5000 watt PIONEER Generators. They can save you time, work and money!

PIONEER Gen-E-Motor Corporation
5832 West Dickens Avenue, Chicago 39, Illinois

Heat Tamperers and Smoothers in HAUCK Asphalt Paving Tool Heaters

Write for Catalog
Asphalt Paving Tool Heater with Rack for Pails

Combination Asphalt Paving Tool and Cement Heater

Asphalt Surface Heaters
Lead and Compound Melting Furnaces
Thawing Burners
Melting Kettles

HAUCK MANUFACTURING CO. 116-126 Tenth Street, Brooklyn 15, N. Y.

Heat 16 or More Tools in 5 Minutes
Hauck Heaters get your asphalt tools ready as you need them. Burn kerosene; can also be furnished to burn L.P. gas. No sparks, no smoke, no ashes. Only safe, controlled heat. Available with built-in binder cement kettle or with rack for binder pails.

OTHER HAUCK HEATING FAVORITES

New TURN-A-TROWEL

AMERICA'S No. 1 BUY

FOR EASIER, FASTER FLOOR FINISHING

FOR FLOATING AND FINISHING CONCRETE WITH A SINGLE MACHINE 34" AND 48" DIAMETER

Conveniently located throttle for gasoline engine. Note: Mounting for electric motor switch interchangeable.

Semi-flexible guard ring

Gyral safety device; automatically stops engine in case handle gets away from operator.

BUILT-IN EASY CARRYING HANDLE
Slides into socket on gear box. Permits convenient lifting with both hands for moving around job.

Gas engine or electric motor mounting.

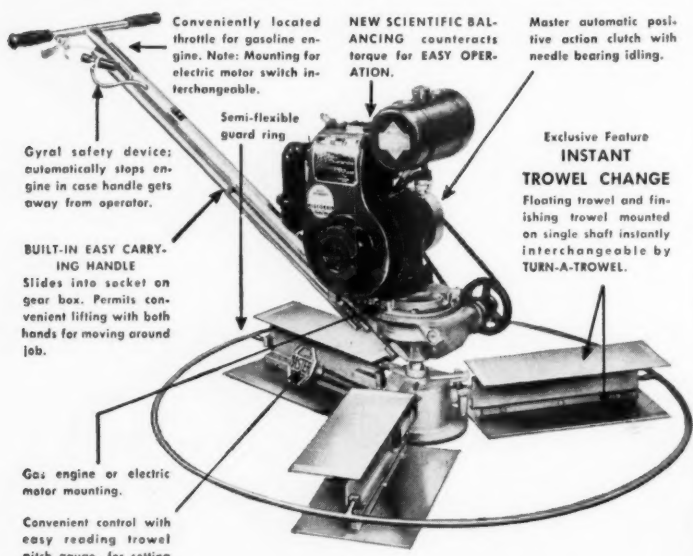
Convenient control with easy reading trowel pitch gauge, for setting all trowels at once with one quick variable adjustment.

SET ALL TROWELS AT ONCE WITH ONE QUICK VARIABLE ADJUSTMENT

NEW SCIENTIFIC BALANCING counteracts torque for EASY OPERATION.

Master automatic positive action clutch with needle bearing idling.

Exclusive Feature INSTANT TROWEL CHANGE
Floating trowel and finishing trowel mounted on single shaft instantly interchangeable by TURN-A-TROWEL.



Write for Catalog 952

MASTER VIBRATOR COMPANY • DAYTON 1, OHIO



Master Portable Generator Plant
1/2 KW to 100 KW



Master Vibratory Concrete Finishing Screenshot



Master Power-Blow Electric Hammer and Spade



Master Space Heaters



Master Gas or Electric Concrete Vibrators

MASTER

BETTER PRODUCTS FOR BIGGER PROFITS



Tractor-mounted digging rig manufactured by Shawnee Mfg. Co., Topeka, Kans.

Tractor-Mounting Clam Digs Vertical Bank

A clam-bucket attachment is now available for the tractor-mounted digging rig made by Shawnee Mfg. Co., Inc., 1947 N. Topeka Ave., Topeka, Kans. Each half of the Hydro-Clam can be operated independently to cut a vertical bank. The bucket digs excavations up to 8 feet long, 7 feet wide, and 8 1/2 feet deep from one position. According to the manufacturer there are 4 1/2 tons of pressure on the bucket teeth of each half of the clam.

The attachment mounts on a Ford or Ferguson tractor and comes with a 24 or 36-inch-wide bucket. The self-leveling clam assembly is said to retain the entire 1/3-yard load while rising to a dumping-height clearance of 7 1/2 feet. It looks for use as a backhoe. Backhoe booms for

using the company's HK or RB backhoe buckets are available.

For further information write to the company, or use the Request Card at page 18. Circle No. 736.

Steel Masonry Scaffolding

Adjustable steel masonry scaffolding is described in a folder from Morgen Mfg. Co., Yankton, S. Dak. Trussed-steel tower units connect by tubular-steel bracing bars to make scaffolding for any length of wall. The entire scaffolding is assembled at the 3-foot wall level and no additional materials, labor, or scaffolding are needed until the wall reaches 15 feet. The folder shows the scaffolding erected for brick-laying.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 784.

REDUCE WELDING COSTS!

on SHOVEL and DIPPER TEETH REPLACEMENTS

USE **MANGANAL**

U. S. Patents 1,876,738-1,947,167-2,021,945

11%-13 1/2% MANGANESE NICKEL STEEL

WEDGE BARS

- Eliminates build-up time.
- Costs far less than new teeth and lasts longer, too.
- Puts equipment back to work faster.
- Available in 23 sizes to fit any worn tooth.

FREE WALL CHART
New edition illustrating 23 actual size MANGANAL WEDGE BARS with dimensions and weights, for easy reference.

WRITE TODAY!

Send for FREE helpful tips on speedy and economical repair of worn equipment.

STULZ-SICKLES CO.
NEAREST DISTRIBUTOR UPON REQUEST

SOLE PRODUCERS 92 N. J. RAILROAD AVE. NEWARK, N. J.



Pouring concrete into forms along the side of Wisconsin Avenue Viaduct, Milwaukee, Wis. The operator of the Schild-Bantam crane couldn't see below bridge level, so a signaling system was devised and the concrete lowered 70 feet over the side of the bridge.

Truck Crane Tackles Five-Operation Job

Heavy arterial traffic had to be kept going on a viaduct while an extensive "remodeling" job was under way. This was the problem facing Concrete Contractors, Inc., Milwaukee, Wis., when the firm took over a contract for removing an old railing and sidewalk, installing new walks and railings, and placing a 6-inch facing of concrete over the entire exterior sidewall of Wisconsin Avenue Viaduct in Milwaukee—a 1/2-mile-long 70-foot-high structure. The solution was to have as few pieces of equipment as possible.

Concrete Contractors decided on a truck-mounted Schild-Bantam crane. By changing front-end attachments as required, and using a 1/2-yard concrete bucket, a 1,000-pound skullcracker ball, and a clamshell, five separate operations were accomplished from street level with

the one truck crane. This is how it was done.

Operation 1 was the building of staging and bridge forms for the concrete facing work. Here the crane was used to lower heavy beams 40 feet down for bracing interior forms under the spandrel wall. Next came the pouring of concrete into forms along the side of the viaduct. This was tricky as the operator couldn't see below bridge level. However, an ingenious signaling system was devised and the operator used the crane's power boom lowering to spot the bucket accurately onto chute openings below.

Operation 3 involved the removal of old railing sections over the whole length of the bridge. In this case Concrete Contractors used the crane attachment to load the concrete sections (some weighing as much as 9,500 pounds) and street light pedestals onto waiting trucks.

CUT COSTS

SAVE TIME with . . .

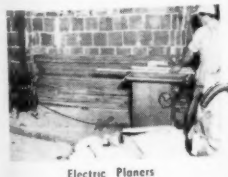
Economy-Engineered

WINCO

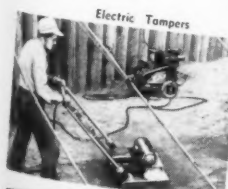
ENGINE GENERATORS



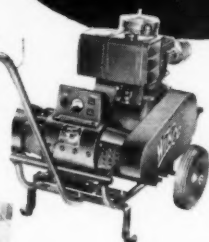
Cut Off and Chain Saws



Electric Planers



Electric Tampers



MODEL 4500 — 2500 Watts A.C. on "Speedy-Shift" Portable base. Other models 500 Watts to 10 KW. Prices start at \$214.00. Write for details.

Why burden your costs by using hand tools on jobs away from accessible power? WINCO portable Economy-Engineered Generators supply ample power for cost-cutting electric saws, drills, planers, routers, tampers, pipe threaders — and lights, too! Low-cost construction demands portable electric power — WINCO Generators provide it efficiently and economically for every job!

WINCHARGER CORPORATION, 2181 E. 7th St., Sioux City, Iowa
A wholly owned subsidiary of Zenith Radio Corporation

The fourth operation was breaking up the old sidewalk all along the bridge, and for this the skullcracker ball was hooked on. Finally, cleaning up the job before laying new walks and rails involved the removal of broken concrete, fill dirt, and other refuse. Here the operator made use of the clamshell attachment.

Pyramid Appoints Fletcher

L. R. Fletcher, former Assistant Chief Engineer at Maryland Drydock Co., has recently been appointed Manager of the Welding Steels Division, Pyramid Steel Co., Cleveland, Ohio, where he will coordinate and direct all distribution and sales of the division.

Use Swenson self-feeding material spreaders for fast, easy application of salt, chloride, sand, cinders, gravel or a combination of these materials

Free Information

Swenson Spreader & Mfg. Co.

Lindenwood, Illinois



Here's what makes "HEIL EQUIPPED" DUMP TRUCKS

PAY-OFF!



Heil double arm, twin cylinder, heavy-duty hoist.

Heil double arm, single cylinder, light and medium duty hoist.

HEIL Bodies and Hoists are built with your job in mind . . . to pay off in profit. Heil hoists are fast-acting . . . in less than 12 seconds bodies are elevated to 50° or more! The rugged arm assembly is designed for strength, without dead weight. The simple toggle principle of the linkage eliminates troublesome parts, requires extremely low oil pressure. Check these other Heil dump unit advantages: Lightweight design for bigger payloads; no-sag floor construction for long body life; low mounting height to make hand-loading easier.

THE HEIL CO.

Dept. 343, 3003 W. Montana St., Milwaukee 1, Wis.
Factories: Milwaukee, Wis.—Hillsdale, N. J.

Sales Offices: New York, Hillside, Washington, D. C., Atlanta, Cleveland, Milwaukee, Detroit, Chicago, Kansas City, Denver, Dallas, Los Angeles, Seattle; Rio de Janeiro, Brazil.



13 and 18-yd. Heiliner Scrapers



6, 9, 11 and 16-yd. Tractor Drawn Scrapers



Cable Power Control Units

Prestressed-Concrete Roads Under Review

Pretensioning, Post-Tensioning Discussed. Experiments Abroad Show Importance of Subgrade, High-Quality Concrete

By Col. W. P. ANDREWS,
Cement and Concrete Association,
London, England

The following paper was prepared by Col. Andrews to be read at the 1953 Annual Meeting of the American Road Builders' Association in Boston, Mass. In the author's unavoidable absence, the paper was read by Professor Ben H. Petty of Purdue University.

• ONE might feel that there are already sufficient complications in ordinary concrete-road design and construction without introducing further trouble in the way of prestressing. In normal concrete roads the design is based on movements of the slabs due to temperature and moisture, having regard to the low-tensile strength of concrete and the friction between the slab and the subgrade. This involves frequent joints to prevent cracking, and such joints are not only difficult to make and maintain, but are weak spots in the road and may impair its riding qualities. As a slab contracts in cold weather it tends to crack, because the concrete is weak in tension and is unable to overcome the subgrade friction, even when reinforced. This tendency to crack increases with the length of the slab. Also the temperature gradient sets up zones of tensile and compressive stresses, the magnitude of which depends largely on the thickness of the slab.

Why Prestressing?

If we provide in the slab a compressive prestress to overcome these two stresses it will be possible to construct long slabs without joints. The amount of prestress will vary with the thickness and length of the slab. By increasing the prestress over and above that required to overcome temperature and subgrade-restraint effects, the load-bearing capacity of the slab will be increased, and so a thinner slab, with consequent economy of material, can be used.

In our experience so far, the greatest length of slab that can be economically laid is 400 feet. Greater lengths will involve increased subgrade friction, which will demand more steel or higher stresses in the steel to produce the desired stress in the concrete and involve wide and costly expansion joints at the ends of the slab. However, prestressing does promise very definite advantages, among which may be mentioned a saving of material in that a much thinner section of concrete would be permissible without loss of strength; that the slabs could

be very much longer and hence there would be fewer joints; that there would be a substantial saving of steel as compared with nor-

mal reinforced-concrete construction; that the concrete, being always in compression, would not crack and hence such troubles as occurred from mud pumping would be eliminated; and, finally, that on bad subgrades which are impossible to stabilize there would be a very good load distribution.

Another interesting point in the use of prestressed concrete for runways is that a sufficient length of concrete could be laid without expansion joints to permit a jet plane to warm up and take off. In this respect it is well to remember that while concrete runways are not damaged by jet planes, the expan-

sion joints in such runways are a problem, as the jet tends both to melt the bitumen in the joint and to blow away the joint sealer and filler. It will be seen therefore that the introduction of prestressing has sufficient potential advantages to justify further investigation.

Against these advantages should be mentioned the fact that we have as yet insufficient information on the subject. For example, there is no unanimity of opinion as to the best method of placing the steel or the best position for the steel. We do not know how frequently expansion joints should be included, and if such joints are 3 or 4 inches

Southern Superintendent Says "We load quicker, haul faster and Move More Dirt!"



INTERNATIONAL

POWER THAT PAYS



wide we have yet to devise a method of constructing them. Observation, however, on two prestressed roads in England, each 400 feet long, has shown that the maximum change of length from extremes of temperature between summer and winter has been much less than one would expect in normal concrete roads. Normally we cater for a $\frac{3}{4}$ -inch expansion from the lowest to the highest atmospheric temperatures, which would give us an expansion of 3 inches in a 400-foot-long slab. In the prestressed slabs we got only $\frac{3}{4}$ -inch of expansion at each end in one case and $\frac{1}{2}$ -inch at each end in the other. It would

also appear that the amount of expansion depends largely on the friction between the slab and the base. Where the $\frac{1}{2}$ -inch expansion occurred at each end the base was rather uneven. Where the $\frac{3}{4}$ -inch expansion occurred at each end the base was smoother—a sand bed covered with waterproof paper.

Earlier Work in Prestressed Pavements

One of the earliest pavements in prestressed concrete was the runway at Orly Airport, France, which Eugene Freyssinet constructed in 1945-46. It was 1,368 feet long and 195 feet wide and consisted of precast-concrete slabs, each 1 meter

square and $6\frac{1}{2}$ inches thick, laid on a sand base. The subgrade was of questionable quality. At both ends of the runway heavy concrete abutments were constructed. These were 6 feet 6 inches wide, prestressed in both directions, and anchored into the ground by 12 anchor pits 26 feet deep. The pits were circular on plan and widened at the bottom to give the best resistance against uprooting.

The whole runway was divided into six isosceles triangles, which were formed by joints at 45 degrees with the longitudinal axis. The vertical faces of these joints were provided with frictionless rollers be-

tween steel plates. The tensioning of the cables was done transversely, which gave a resultant longitudinal stress tending to lengthen the runway. This was, however, counteracted by the abutments. The result was that the whole runway was in compression both longitudinally and transversely.

This method is hardly likely to be repeated. At the time of construction, which was immediately after the liberation of France, there was a complete absence of road-making plant in that country and the quality of the cement was questionable due to the difficulty of getting suitable coal. For these reasons Mr. Freyssinet adopted the precast slab so that the concrete would be made under close supervision and under factory conditions. Naturally the method was very slow and the cost of making, transporting, and bedding the precast slabs high, and justified only by the peculiar circumstances of the time. Nevertheless this runway has given over 7 years' very satisfactory service and under test loadings immediately after construction it behaved as the designer anticipated.

Repeated loadings of 100 tons were made at various points, and though some cracks did develop they closed up again when the load was removed. In fact such cracking was considered by Mr. Freyssinet to be more beneficial than otherwise. By comparison, an ordinary concrete runway 12 inches thick will crack under a load of 40 tons at the edges or 50 tons in the middle, and the cracks will not recover.

In the spring of 1949 a small length of prestressed concrete road was constructed at Esbly on the River Marne in France. This road was an approach to a prestressed-concrete bridge and it was 164 feet long, 26 feet wide, and $6\frac{1}{2}$ inches thick. It was post-tensioned with Freyssinet cables which were laid at an angle of 45 degrees to the center line of the road and at 29-inch centers. These cables consisted of 12 wires each of 5 mm diameter, and the ends of the cables were passed through special precast-concrete curbs along each side of the road. The female cones had already been embedded in these curbs and each cable was tensioned from both ends.

The amount of reinforcement in this road would appear to be excessive, as is the number of cones. It may be that there was a surplus of cables and cones from the neighboring bridge and this was the most economical way of disposing of them.

In 1950 a prestressed-concrete road was constructed at Crawley, England, and was 400 feet long and 26 feet wide, the concrete being laid in two longitudinal strips. The concrete in this case was 6 inches thick. Again the Freyssinet method of prestressing was adopted. The cables were laid at an angle of about 30 degrees with the center line and at 7-foot 6-inch centers. They passed through a concrete haunch on either side of the road in which the female cones had been embedded. The cables were first laid before the concrete was placed and were enclosed in stout steel sheaths. Again tensioning was done from both ends of each cable. Between the time of

(Continued on next page)

Atlanta airport expansion job is scene of new triumph for International power

When C. A. A. district headquarters decided to move to Atlanta, Georgia, the east-west runway at nearby Fulton County Airport had to be extended to 5,000-foot length.

One contractor, C. L. Rhodes of Decatur, Georgia, is doing the entire job, including cutting through a 39-foot hill and moving 350,000 cubic yards of sandy clay.

Rhodes' General Superintendent, R. N. Smith, tells how the work is going:

"We load quicker, haul faster and move more dirt with our Internationals than with any other crawlers."

"Our operators push 'em to the limit all day long to get the job done ahead of schedule. The tractors get clean filters, fuel and grease, and hard work—more hard work than is reasonable—and they take it month after month without a let down!"

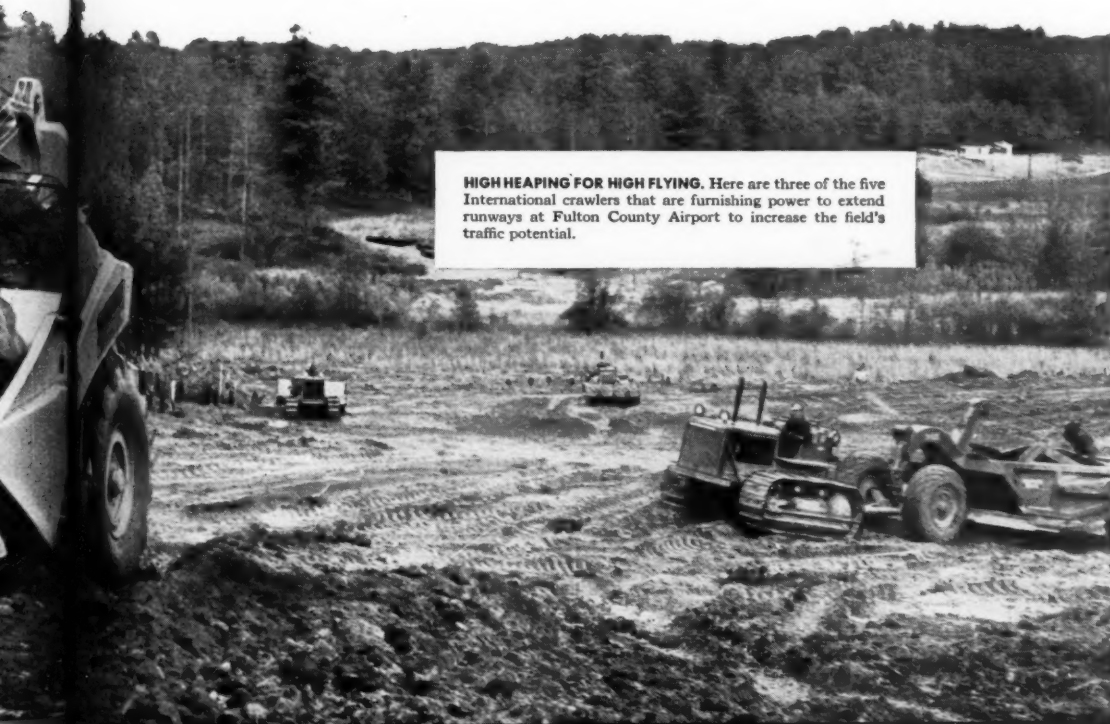
That's what International owners everywhere are finding out. Find out for yourself. Ask your International Industrial Distributor for details.

**INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS**



JOHNNY-ON-THE-SPOT SERVICE. A fast field service team from International's Atlanta distributor rolls up to the job site. Service like this from your International distributor is as near as your nearest telephone, to cut down downtime and keep your equipment rolling!

HIGH HEAVING FOR HIGH FLYING. Here are three of the five International crawlers that are furnishing power to extend runways at Fulton County Airport to increase the field's traffic potential.



Prestressed Concrete

(Continued from preceding page)

placing the concrete and the date of applying the tensile stresses to the cables about seven cracks had developed in the concrete. When the road was stressed these cracks all closed up and there has been no further trouble from them.

The experiences at Esbly and at Crawley suggested to the CACA the desirability of investigating the problems of prestressed roads more fully and trying out different methods.

Methods of Prestressing

In structural prestressed-concrete work there are in general two methods of prestressing—pretensioning and post-tensioning. In the first the steel is tensioned and elongated against fixed abutments to the calculated amount, and the concrete is placed and compacted around it, the load on the steel being transferred to the concrete after the concrete has hardened. In the second method the steel cables are free to move in the concrete and are tensioned after the concrete has hardened.

In road and runway construction

another method, suggested by Dr. Fritz Leonhardt of Germany, is to compress the concrete by means of suitable jacks reacting between the slab and a fixed abutment, thus obviating the use of any steel. This method suffers from the disadvantage that its use is limited to flat straight slabs because of the danger of blow-ups. Also any damage to the abutments or any displacement of them might result in the loss of all the stress in the slab, and the possibility of such damage to a runway in wartime cannot be overlooked.

The pretensioning method is not practical in road or runway construction owing to the difficulty of forming suitable anchorages for the steel. It has been advocated by Kurt Billig, but there is no record of its having been tried in practice. Hence in our opinion the most practical method is that involving the post-tensioning of the cables after the concrete has matured.

This post-tensioning raises the question of how and where the cables should be placed. As already stated, both at Esbly and Crawley the cables were diagonal to the cen-

There is a GM Diesel Engine Distributor Near You

ALABAMA—Birmingham 1
ARMSTRONG EQUIPMENT CO.

Montgomery 1
ALABAMA MACHINERY & SUPPLY CO.

ARIZONA—Phoenix
O'CONNELL BROTHERS, INC.

ARKANSAS—North Little Rock
LEWIS-DIESEL ENGINE CO.

CALIFORNIA—Berkeley
WEST COAST ENGINE & EQUIP. CO.
Los Angeles 21
ANDERSON-O'BRIEN CO.

COLORADO—Denver 9
THE COLORADO BUILDERS' SUPPLY CO.
(Equip. Div.)

CONNECTICUT—Hartford
HOLMES-TALCOTT, INC.

FLORIDA—Jacksonville 2
FLORIDA DIESEL ENGINE SALES

GEORGIA—Atlanta 2
BLALOCK MACHINERY & EQUIPMENT CO.

IDAHO—Boise
SOUTHERN IDAHO EQUIPMENT CO.

ILLINOIS—Bellwood
D. D. KENNEDY, INC.

INDIANA—Lawrence
FLESC-MILLER TRACTOR CO.

IOWA—Des Moines
STEPHENS-JONES, INC.

KANSAS—Wichita
DIESEL EQUIPMENT CO., INC.

KENTUCKY—Lexington 47
BOGIE EQUIPMENT COMPANY

LOUISIANA—Harvey
GEORGE ENGINE CO., INC.

Shreveport
UNITED TOOL CO.

MAINE—Portland 3
EASTERN TRACTOR & EQUIPMENT CO.

MARYLAND—Baltimore 30
McCLUNG-LOGAN EQUIPMENT, INC.

MASSACHUSETTS—Burlington
MORRISSEY BROTHERS TRACTOR CO.

MICHIGAN—Detroit 4
THE EARLE EQUIPMENT CO.

MINNESOTA—St. Paul
BORCHERT-INGERSOLL, INC.

MISSISSIPPI—Jackson
TAYLOR MACHINE WORKS

MISSOURI—North Kansas City
K C DIESEL POWER COMPANY
St. Louis 10
WESTERN MACHINERY & ENGINE CO.

MONTANA—Billings
SEITZ MACHINERY CO., INC.
Missoula
MOUNTAIN TRACTOR COMPANY

NEBRASKA—Omaha 2
FEHR'S TRACTOR & EQUIPMENT CO.

NEVADA—Reno
SIERRA MACHINERY CO., INC.

NEW MEXICO—Albuquerque
THE HARRY CORNELIUS CO.

NEW YORK—Buffalo 10
BROCK TRACTOR COMPANY, INC.
New York 54
GRIFFIN EQUIPMENT CORP.

Syracuse 2
L. B. SMITH, INC.

NORTH CAROLINA—Greensboro
E. F. CRAVEN COMPANY

NORTH DAKOTA—Fargo
SWEENEY BROS. TRACTOR CO.

OHIO—Cleveland 13
GREAT LAKES DIESEL CO.
Columbus
CENTRAL OHIO TRACTOR CO.
Steubenville
RAY C. CALL COMPANY

OKLAHOMA—Oklahoma City
DIESEL POWER COMPANY



GM DIESEL
CASE HISTORY No. 528-2

USER: Ritchie Brothers Construction Co.,
Wichita, Kansas, paving contractor.

INSTALLATION: GM 3-71 Diesel, replacing an
8 cylinder gasoline engine in a 3/4 yard
dragline equipped with 46-foot boom.

PERFORMANCE: Plant Superintendent H. G.
Hoffman reports the power and quick pickup
of the GM Diesel engine permit this drag-
line to do 25% more work. Fuel and main-
tenance costs are both reduced.

PRODUCTION WENT UP 25% when GM Diesel went in

"General Motors Diesel power made a real shovel out of this unit," says Mr. Hoffman. "We also use a 6-71 to power an asphalt plant, and recently, when we bought a new shovel, we ordered it equipped with GM Diesel power."

In new equipment or old, a 2-cycle GM Diesel gets more work done at lower cost. It produces power at every piston downstroke to give equipment maximum torque the instant a load hits—

before engine r.p.m. falls off. A GM Diesel starts at the push of a button, burns few gallons of low-cost fuel, and delivers years of dependable service. Parts cost less and are readily available. Talk with other GM Diesel owners. Then see your GM Diesel distributor for economical horsepower—for any job.

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN
SINGLE ENGINES...to 275 H.P. MULTIPLE UNITS...up to 840 H.P.

It pays to Standardize on

Write for booklet, "A 50,000,000 Horsepower Insurance Policy" that tells you why.



OREGON—Portland 9
GUNDERSON BROS. ENGINEERING CORP.

PENNSYLVANIA—Philadelphia 31
FRANTZ EQUIPMENT COMPANY
Pittsburgh 6
HIGHWAY EQUIPMENT CO.

Wilkes-Barre
STANDARD EQUIPMENT CO.

SOUTH CAROLINA—W. Columbia
VAN LOTT, INC.

SOUTH DAKOTA—Sioux Falls
SIOUX ROAD EQUIPMENT, INC.

TENNESSEE—Chattanooga 1
NIXON MACHINERY & SUPPLY CO., INC.
Memphis 2
LEWIS-DIESEL ENGINE CO.

TEXAS—Houston
STEWART & STEVENSON SERVICES INC.
El Paso
EQUIPMENT SUPPLY CO., INC.
Plainview
DIESEL POWER, INC.

UTAH—Salt Lake City 4
CATE EQUIPMENT CO., INC.

VERMONT—Barre
HILL-MARTIN CORPORATION

VIRGINIA—Richmond 22
BEMISS EQUIPMENT CORP.

WASHINGTON—Seattle 9
EVANS ENGINE & EQUIPMENT CO., INC.

Seattle 4
YUKON EQUIPMENT CO., INC. (ALASKA)
Spokane
MODERN MACHINERY CO., INC.

WISCONSIN—Milwaukee 8
DROTT TRACTOR CO., INC.

WYOMING—Casper
THE COLORADO BUILDERS' SUPPLY CO.
(Equip. Div.)

ter line of the road and tensioned diagonally so that there was a resultant stress in a longitudinal direction.

In the CACA we have felt that practically all the prestress is required in the longitudinal direction, though in the case of wider slabs a little transverse stress or even simple reinforcement might be an advantage. It is well, however, to remember that where transverse stressing is introduced in such a case, involving one cable passing over another, the cables will occupy a thickness of 3 to 4 inches, which is a very high proportion of a slab 6 inches thick. We considered that in longitudinal stressing the most obvious method was to pass the cables straight down the length of the slab from end to end and to apply the stress at one or both ends. Comparing this method with the diagonal stressing there is a small saving in steel, but there are much fewer stressing operations required, which means a great saving in cones, labor, and general overheads.

Details of Work

At our research station at Wexham Springs we constructed three lengths of road, 190 feet, 110 feet, and 130 feet in length, in all cases using the Freyssinet cables made up of 12 wires each of 5-mm diameter. The following is a detailed description of the work done on the 110-foot length.

In this length we had two cables up each side of the road. They were enclosed in a light steel sheath and at one end, the furthest from the jacking point, the wires of the outer cable were exposed and splayed out with their ends hooked to form an anchorage and also give corner reinforcement, while the inner cable was continuous. The cables were placed in position and supported on concrete blocks before the concrete was placed. The other end of the cables passed through female cones and extended beyond the end of the slab. After the cables were in position the concrete was placed and compacted by a finisher, which gave very dense compaction and a crushing strength of the concrete at 14 days of about 6,000 pounds per square inch. When the concrete was 14 days old the stress was applied.

Loss of Prestress Is Overcome

The initial load applied to the cables was 70 tons per square inch, which should have given an extension of 7.5 inches in the cable. However, under the full load the total

extension was only 4.87 inches and although the load was increased to 80 tons per square inch it was not possible to get anywhere near the estimated extension. Investigation showed a steady loss of prestress throughout the length of the cable, and only half of the estimated prestress at the end furthest from the jacking.

We released the load and cut holes in the concrete to expose and examine the cable. We found the steel sheath crushed hard against the cable; in fact, the lines of the cables were clearly indented in the steel sheaths, which indicated that the excess of friction was due to the fact that in compacting the concrete we also crushed the steel sheath against the cables. We applied the load again and measured the extension in the cable at 15-foot intervals along this length, but were still unable to get our estimated extension.

This loss through friction was common to all three roads which we had constructed and indicated the necessity for devising some means of overcoming it. A much stronger steel sheath such as was used at Crawley would be satisfactory but too expensive. We experimented with forming a hole in the concrete by means of a duct and this was partly satisfactory, but there was a sagging in the duct which caused difficulty in passing the cables through the duct and still left considerable friction. After several experiments we finally evolved a method which was subsequently used with success in May, 1952, at Basildon, Essex, England. This method consisted of laying a 30-foot length of water barrel whose external diameter was slightly bigger than the external diameter of the cables, and supporting this at frequent intervals on concrete blocks.

Concreting proceeded over and around this barrel, the concrete being compacted by a vibrating hand tamper. As concreting proceeded, the barrel was drawn forward by means of a chain-and-cable attachment to a winch. Here may be mentioned the importance of getting a straight pull in line with the barrel, as otherwise there would be a tendency to start a longitudinal crack in the concrete over the barrel.

Concreting proceeded continuously and a clear hole was left throughout the whole length of the slab, which in this case was 160 feet long. In fact, it was possible to look through this hole and see daylight at the far end. Subsequently the cables were passed through the holes thus formed, an operation which presented no difficulties whatever.

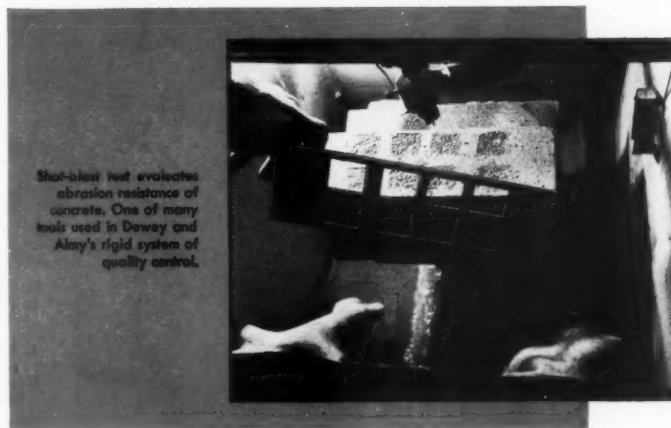
The female cones were attached to the stunthead after the cables had

(Continued on next page)



"Shirtsleeves" Research

... BIG REASON WHY
DEWEY AND ALMY
CONSTRUCTION
PRODUCTS PAY OFF
on the job



You get dependable performance from Dewey and Almy construction products. You get it where it counts most—in the field, on the job. For each Dewey and Almy product is a result of years of down-to-earth research and field-tested quality controls.

The extensively equipped Dewey and Almy Cement and Concrete Laboratory is not an "ivory tower" ... it is a practical proving ground that mirrors actual field conditions. And Dewey and Almy engineers are practical men with the experience to translate today's test results into specifications for tomorrow's improvements.

Get acquainted with Dewey and Almy products for the cement and concrete industries. See why engineers, architects and contractors all over the world rely on them for their most important projects.



DEWEY and ALMY
Chemical Company
Cambridge 40, Mass.

Construction Buildings Bolted Together in a Few Hours!



The answer to needs of contractors, architects and engineers for a low cost, quickly erected and dismantled building. Proven ideal for field offices, workshops, tool sheds, storage and bunk houses. Built in unit-sections, reusable on job after job. 6-sided "bar" buildings in 4 different sizes are extendable to any length. Finest West Coast Fir throughout. Endorsed by hundreds of contractors. Write for Circular.

WRIGHT COMPANY
9317 Cottage Grove Avenue
Chicago, Ill.
RAcliff 3-0212

DAREX AEA • world's most widely used brand of air entraining agent. Concrete made with DAREX AEA places easier, finishes faster and better, has finer surface texture, is many times more durable when exposed to freezing and thawing.

AIRALON • A ready-to-use air entraining agent and plasticizer that contains all the ingredients necessary to make a superior masonry cement.

DARASEAL • Creates a "membrane" film which keeps water in newly

poured concrete for better and more complete curing.

GRINDING AIDS • Catalyzing grinding aids for cement mills that increase grinding rates of Type 1 cement 15 to 20%; of Type 2 cement 20 to 25%; of Type 3 cement 25 to 50%.

DARACONE • Long-lived silicone water repellent for above grade exterior masonry walls. Effectively combats efflorescence and leaks without affecting the appearance or "breathing" qualities of the masonry.

Prestressed Concrete

(Continued from preceding page)

been passed through them. The space between this stunthead and the hardened concrete was subsequently filled in, the cables in this space being enclosed in sheaths. In this section of road four cables were used.

An important practical point in prestressing is the danger of a weak spot in the concrete occurring where a very heavy load is applied at the point of the jack, and should the concrete not be able to stand up to the stress imposed upon it an accident might easily occur through lumps of concrete flying out and injuring onlookers. This did actually happen on one job. Wrapping sack-ing around the jacks covers the wedges in the jacks, as these have at times been known to fly out and travel 30 or 40 yards, an incident which might easily cause serious personal damage.

On the job at Basildon the full extension of the cables was obtained without any difficulty, the total jacking operation requiring only a matter of about 7 minutes. One small crack had appeared in one of the slabs but it was closed tight when the cables were tensioned and has not shown any signs of opening or raveling since.

All the work described has been on straight level stretches and it has taught us a lot. The roads constructed so far have given entirely satisfactory service, though none of them has been subjected to very heavy traffic and all of them have been on reasonably good subgrades. At Basildon the first section of road, curved on plan, was constructed. This was a length of 150 feet on a gradient of 1 in 135 and on a curve of 124-foot radius. For this job the water-barrel method of forming a duct in the concrete could not be used, and instead the cables were enclosed in a special strong proprietary sheathing. There were in all seven cables equally spaced at the ends of the slab. Numbering these 1 to 7, No. 1 followed the outer perimeter of the curve and was about 12 inches from the edge of the slab. No. 2 started at No. 2 cone at one end and curved to No. 7 cone at the other. Nos. 3, 4, 5, and 6 did not follow the full length of the slab but extended from the cones at one end to the outer edge of the curve about one-third the distance from the other end. No. 7 corresponded to No. 2.

In stressing, operations started on Nos. 2 and 7 cables, then Nos. 6, 5, 4, and 3 simultaneously, and finally No. 1.

It was found that though the sheath protected the cables there was still some loss of prestress through friction, but not sufficient to cause uneasiness.

Quality of Subgrade

The matter of the quality of the subgrade is in my opinion one of great importance. Frequently it is necessary to construct roads on soils which are far from desirable and which it is impossible to stabilize or drain. The Fen District of East Anglia, deep peat bogs, and marshes are cases in point. For such, lightness of construction, combined with strength and good load distribution are the desiderata. We have in the

past constructed concrete roads over peat using an extra reinforcement and doweling the joints. Some such roads have been excellent, others have in the course of time become wavy, the surface varying with the degrees of compressibility of the subgrade. The best I know is one constructed in 1927 over very bad peat. It was 9 inches thick doubly reinforced with heavy dowel bars in the joints. At the end of some 25 years it is still excellent.

It would seem that if one could at an economical figure construct a prestressed road on such a subgrade, it would lead to a solution of the problem. Even with slabs only 200 feet long there would be a big dis-

tribution of the traffic-point loads, while the relative lightness of the construction would avoid imposing an unduly heavy dead load on the soil.

Are Prestressed Roads Economical?

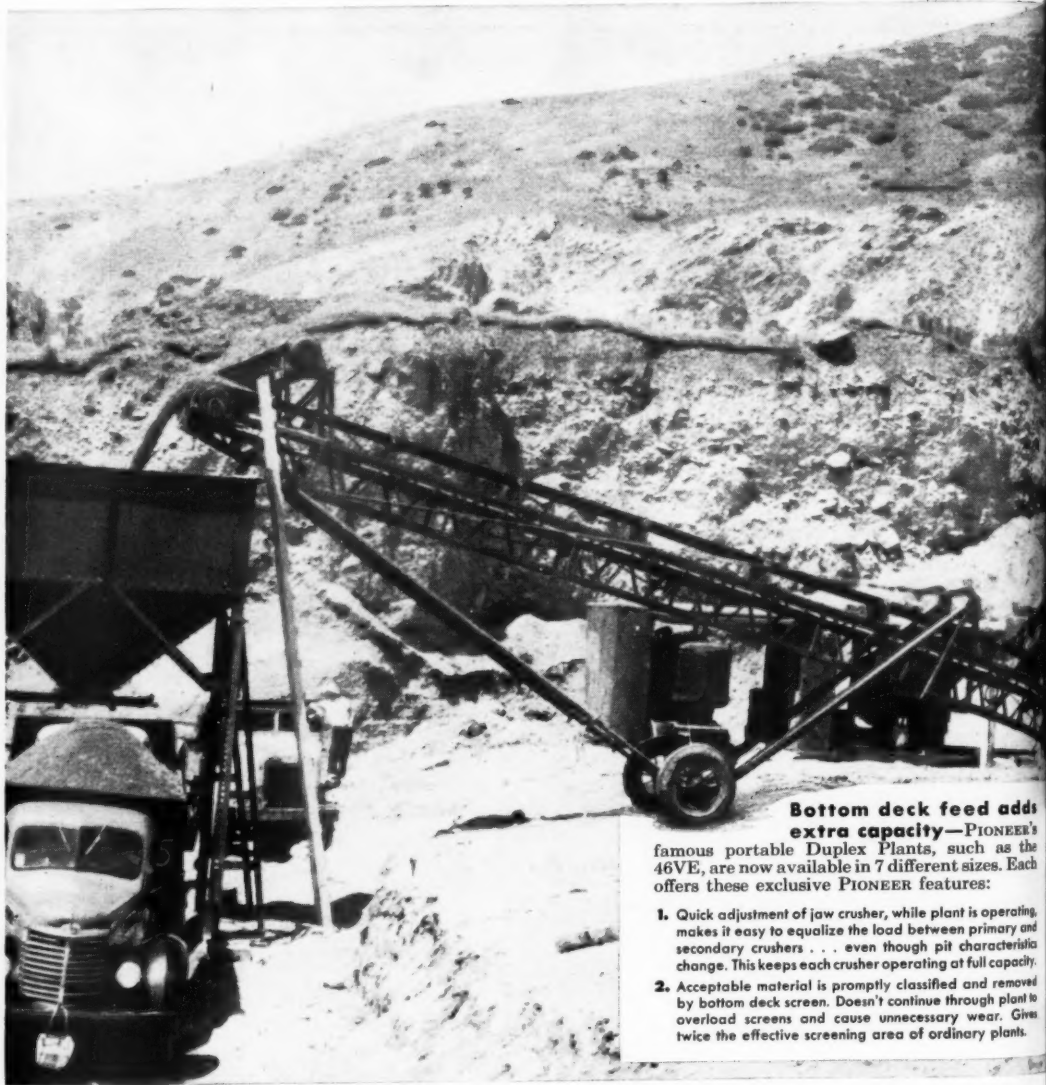
This consideration raises the question of the economy of the prestressed-concrete road, and as yet we have little to go by. The experiments carried out by the Cement and Concrete Association concerned themselves only with construction and design details. It is reported that the runway at Orly, 6½ inches thick, cost about the same as normal unreinforced concrete 12 inches thick and that the cost of the abut-

ments was equivalent to that of an extra length of 60 feet of runway. However, this job cannot be taken as typical as the method of construction, with precast slabs, was most expensive.

At Crawley, the cost of a 6-inch-thick prestressed road was practically the same as that of an 8-inch singly reinforced road of nominal construction. In fact one experienced contractor quoted about 7 per cent less per square yard for the prestressed road. Again the cost could have been considerably reduced by omitting the concrete haunch (which was proved to be unnecessary) and possibly economizing also in the amount of steel

When specifications are tough...

that Pioneer Edge



Bottom deck feed adds extra capacity—

famous portable Duplex Plants, such as the 46VE, are now available in 7 different sizes. Each offers these exclusive PIONEER features:

1. Quick adjustment of jaw crusher, while plant is operating, makes it easy to equalize the load between primary and secondary crushers... even though pit characteristics change. This keeps each crusher operating at full capacity.
2. Acceptable material is promptly classified and removed by bottom deck screen. Doesn't continue through plant to overload screens and cause unnecessary wear. Gives twice the effective screening area of ordinary plants.

BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer

Continuflow **EQUIPMENT**

CONTRACTORS AND ENGINEERS

used and in the method of construction.

On another site the cost of the prestressed work 6 inches thick was higher than that of normal 8-inch-thick reinforced concrete. This higher cost was mainly due to the novelty of the work and the inexperience of the engineers and operatives. The engineer in charge feels that if he were to do another road his costs for 6 inches of work would be about the same as for a 6-inch slab singly reinforced, and considerably cheaper than an 8-inch slab singly reinforced.

Summarizing, I think it is safe to say that the application of the principle of prestressing to roads and

runways has passed the theoretical stage. The possibilities are unlimited and one can visualize slabs as thin as 3 or 4 inches satisfactorily carrying heavy loads. Mr. Freyssinet claims that a slab 6½ inches thick has a load-bearing capacity equal to that of normal concrete 24 inches thick. In addition to this is the fact that in the thinner slab warping stresses are reduced to a negligible quantity, the difference in temperature between the top and bottom of the slab is greatly reduced, and the risk of cracking is eliminated.

The development of the prestressed road will bring its own problems, of which the construction of expansion joints is only one.

Finally I would emphasize that prestressing is possible only where high-quality concrete is used. Apart from its other qualities this construction must focus attention on the production of high-grade concrete, on careful design and control of the mix, and on correct placing and compaction. This in itself is an achievement.

Folder on Measuring Tape

A booklet on nonmetallic woven tapes is available from Keuffel & Esser Co., Adams & Third St., Hoboken, N. J. The Phoenix Wyteface is ¾ inch wide and is made of plastic-covered synthetic materials.

It comes in 25 to 150-foot lengths.

The booklet discusses the wearing qualities and accuracy of the tape.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 747.

Proposes Increased Tax On Heavy Trucks

Ordinarily, a plan for raising highway revenue while reducing taxes on passenger-car owners seems a fantastic one. At the 32nd Annual Meeting of the Highway Research Board in Washington, D. C., however, D. F. Pancoast, Staff Engineer of the Ohio Department of Highways, presented a paper expounding just this idea. In the first public report of its kind, Mr. Pancoast applied the "incremental solution" or "incremental method" to modern highway-finance problems — a method that relates a vehicle's taxes to each increment of road cost for which its weight and mileage make it responsible. As a result of such research, Mr. Pancoast has found heavy trucks are paying much less than the equivalent of their road-cost responsibility, and in the case of the heaviest trucks, are actually responsible for 87 times as much highway wear and tear as typical passenger cars. In justice these trucks should be taxed \$3,514.24 a year, according to Mr. Pancoast's figures. Yet, the most recent figures published by the Bureau of Public Roads show that heavy trucks in Ohio have been taxed about one-third of this amount. He has found similar figures in a study of other types of trucks in Ohio—all leading him to the same point that trucks are not taxed enough.

Mr. Pancoast's projected tax schedule would enable Ohio to obtain \$220,000,000 a year from its motor vehicles at an average annual cost to the private motorist of \$40. The \$220,000,000 is more than one-half as much again as the \$136,310,000 collected in 1951 at an approximate cost of \$72.11 to the private motorist (average annual tax paid by sedan owner in United States).

According to engineers, this tax proposal contains more data on responsibility for highway costs than any collated before. It contains two unique ideas: advocacy that "axle-miles" be used to measure road usage instead of the customary ton-miles or vehicle-miles; and the separation of tax responsibilities for tractor-trucks and the trailers and semitrailers they tow.

Mr. Pancoast hopes his study of the "incremental method" will encourage others to improve it, and use the data thus far found.

Folder on Concrete Piles

A folder describing methods of placing concrete piles is offered by the MacArthur Concrete Pile Corp., 18 E. 48th St., New York 17, N. Y. Piles discussed include the compressed-concrete straight-shaft type, the permanent-cased type, and the composite type of concrete and wood or pipe. The company's service ranges from taking of borings to placement of piles.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 743.

helps you meet them

How Parsons & Fife overcame difficult problem

Utah state engineers know how to write a stiff set of specifications... and that's exactly what they did for the new 55 foot expressway between Salt Lake City and Parley's Canyon.

For this job, they required a base course of 1" maximum, with 45-65% passing the No. 4 screen, 35-55% the No. 40, and not more than 2% of minus 200 mesh material.

To produce sufficient minus No. 4 and 40 material required a close roll setting, yet a ½" clearance produced more fines than specifications allowed.

A problem? Not for Parsons

& Fife of Brigham City, the contractor. Because they owned a portable PIONEER 46VE plant, it was a simple matter to open the rolls to ⅝", then, while the plant was running, gradually close the jaw setting to the precise position at which specifications were met.

Result: Despite 52% crushing, an average production of 1750 (and sometimes 2,100) tons of specification material per 8 hour shift. Once again, a smart contractor, with the PIONEER EDGE on his side, met a tough set of specifications and still finished his job ahead of schedule.



Have the Pioneer Edge

on your side—Parsons & Fife are typical of hundreds of experienced contractors who have learned that PIONEER equipment helps them produce the extra needed to gain a competitive advantage when bidding is close.

What are your needs? Check the coupon for details, specifications, and information on PIONEER equipment that will help you cut costs on your next job.

PIONEER ENGINEERING WORKS, INC.
1515 Central Avenue • Minneapolis 13, Minnesota
(SUBSIDIARY OF POOR & COMPANY • CHICAGO)

• Please send me information on the equipment checked.

- | | | |
|--|--|---|
| <input type="checkbox"/> JAW CRUSHERS | <input type="checkbox"/> GRAVEL PLANTS | <input type="checkbox"/> APRON FEEDERS |
| <input type="checkbox"/> ROLL CRUSHERS | <input type="checkbox"/> WASHING PLANTS | <input type="checkbox"/> MECHANICAL FEEDERS |
| <input type="checkbox"/> ROCK PLANTS | <input type="checkbox"/> BITUMINOUS PLANTS | <input type="checkbox"/> VIBRATING SCREENS |
| <input type="checkbox"/> ORO FEEDERS | <input type="checkbox"/> BITUMINOUS PAVERS | <input type="checkbox"/> CONTINUFLQ CONVEYORS |

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

Prestressed Concrete

(Continued from preceding page)

been passed through them. The space between this stunthead and the hardened concrete was subsequently filled in, the cables in this space being enclosed in sheaths. In this section of road four cables were used.

An important practical point in prestressing is the danger of a weak spot in the concrete occurring where a very heavy load is applied at the point of the jack, and should the concrete not be able to stand up to the stress imposed upon it an accident might easily occur through lumps of concrete flying out and injuring onlookers. This did actually happen on one job. Wrapping sack-ing around the jacks covers the wedges in the jacks, as these have at times been known to fly out and travel 30 or 40 yards, an incident which might easily cause serious personal damage.

On the job at Basildon the full extension of the cables was obtained without any difficulty, the total jacking operation requiring only a matter of about 7 minutes. One small crack had appeared in one of the slabs but it was closed tight when the cables were tensioned and has not shown any signs of opening or raveling since.

All the work described has been on straight level stretches and it has taught us a lot. The roads constructed so far have given entirely satisfactory service, though none of them has been subjected to very heavy traffic and all of them have been on reasonably good subgrades. At Basildon the first section of road, curved on plan, was constructed. This was a length of 150 feet on a gradient of 1 in 135 and on a curve of 124-foot radius. For this job the water-barrel method of forming a duct in the concrete could not be used, and instead the cables were enclosed in a special strong proprietary sheathing. There were in all seven cables equally spaced at the ends of the slab. Numbering these 1 to 7, No. 1 followed the outer perimeter of the curve and was about 12 inches from the edge of the slab. No. 2 started at No. 2 cone at one end and curved to No. 7 cone at the other. Nos. 3, 4, 5, and 6 did not follow the full length of the slab but extended from the cones at one end to the outer edge of the curve about one-third the distance from the other end. No. 7 corresponded to No. 2.

In stressing, operations started on Nos. 2 and 7 cables, then Nos. 6, 5, 4, and 3 simultaneously, and finally No. 1.

It was found that though the sheath protected the cables there was still some loss of prestress through friction, but not sufficient to cause uneasiness.

Quality of Subgrade

The matter of the quality of the subgrade is in my opinion one of great importance. Frequently it is necessary to construct roads on soils which are far from desirable and which it is impossible to stabilize or drain. The Fen District of East Anglia, deep peat bogs, and marshes are cases in point. For such, lightness of construction, combined with strength and good load distribution are the desiderata. We have in the

past constructed concrete roads over peat using an extra reinforcement and dowering the joints. Some such roads have been excellent, others have in the course of time become wavy, the surface varying with the degrees of compressibility of the subgrade. The best I know is one constructed in 1927 over very bad peat. It was 9 inches thick doubly reinforced with heavy dowel bars in the joints. At the end of some 25 years it is still excellent.

It would seem that if one could at an economical figure construct a prestressed road on such a subgrade, it would lead to a solution of the problem. Even with slabs only 200 feet long there would be a big dis-

tribution of the traffic-point loads, while the relative lightness of the construction would avoid imposing an unduly heavy dead load on the soil.

Are Prestressed Roads Economical?

This consideration raises the question of the economy of the prestressed-concrete road, and as yet we have little to go by. The experiments carried out by the Cement and Concrete Association concerned themselves only with construction and design details. It is reported that the runway at Orly, 6½ inches thick, cost about the same as normal unreinforced concrete 12 inches thick and that the cost of the abut-

ments was equivalent to that of an extra length of 60 feet of runway. However, this job cannot be taken as typical as the method of construction, with precast slabs, was most expensive.

At Crawley, the cost of a 6-inch-thick prestressed road was practically the same as that of an 8-inch singly reinforced road of nominal construction. In fact one experienced contractor quoted about 7 per cent less per square yard for the prestressed road. Again the cost could have been considerably reduced by omitting the concrete haunch (which was proved to be unnecessary) and possibly economizing also in the amount of steel

When specifications are tough...

that Pioneer Edgemoor



Bottom deck feed adds extra capacity—PIONEER's

famous portable Duplex Plants, such as the 46VE, are now available in 7 different sizes. Each offers these exclusive PIONEER features:

1. Quick adjustment of jaw crusher, while plant is operating, makes it easy to equalize the load between primary and secondary crushers... even though pit characteristics change. This keeps each crusher operating at full capacity.
2. Acceptable material is promptly classified and removed by bottom deck screen. Doesn't continue through plant to overload screens and cause unnecessary wear. Gives twice the effective screening area of ordinary plants.

BUY BOTH!

HIGHER OUTPUT
LOWER UPKEEP

Pioneer

Continuflow EQUIPMENT

CONTRACTORS AND ENGINEERS

used and in the method of construction.

On another site the cost of the prestressed work 6 inches thick was higher than that of normal 8-inch-thick reinforced concrete. This higher cost was mainly due to the novelty of the work and the inexperience of the engineers and operatives. The engineer in charge feels that if he were to do another road his costs for 6 inches of work would be about the same as for a 6-inch slab singly reinforced, and considerably cheaper than an 8-inch slab singly reinforced.

Summarizing, I think it is safe to say that the application of the principle of prestressing to roads and

runways has passed the theoretical stage. The possibilities are unlimited and one can visualize slabs as thin as 3 or 4 inches satisfactorily carrying heavy loads. Mr. Freyssinet claims that a slab 6½ inches thick has a load-bearing capacity equal to that of normal concrete 24 inches thick. In addition to this is the fact that in the thinner slab warping stresses are reduced to a negligible quantity, the difference in temperature between the top and bottom of the slab is greatly reduced, and the risk of cracking is eliminated.

The development of the prestressed road will bring its own problems, of which the construction of expansion joints is only one.

Finally I would emphasize that prestressing is possible only where high-quality concrete is used. Apart from its other qualities this construction must focus attention on the production of high-grade concrete, on careful design and control of the mix, and on correct placing and compaction. This in itself is an achievement.

Folder on Measuring Tape

A booklet on nonmetallic woven tapes is available from Keuffel & Esser Co., Adams & Third St., Hoboken, N. J. The Phoenix Wyteface is ¾ inch wide and is made of plastic-covered synthetic materials.

It comes in 25 to 150-foot lengths.

The booklet discusses the wearing qualities and accuracy of the tape.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 747.

Proposes Increased Tax On Heavy Trucks

Ordinarily, a plan for raising highway revenue while reducing taxes on passenger-car owners seems a fantastic one. At the 32nd Annual Meeting of the Highway Research Board in Washington, D. C., however, D. F. Pancoast, Staff Engineer of the Ohio Department of Highways, presented a paper expounding just this idea. In the first public report of its kind, Mr. Pancoast applied the "incremental solution" or "incremental method" to modern highway-finance problems — a method that relates a vehicle's taxes to each increment of road cost for which its weight and mileage make it responsible. As a result of such research, Mr. Pancoast has found heavy trucks are paying much less than the equivalent of their road-cost responsibility, and in the case of the heaviest trucks, are actually responsible for 87 times as much highway wear and tear as typical passenger cars. In justice these trucks should be taxed \$3,514.24 a year, according to Mr. Pancoast's figures. Yet, the most recent figures published by the Bureau of Public Roads show that heavy trucks in Ohio have been taxed about one-third of this amount. He has found similar figures in a study of other types of trucks in Ohio—all leading him to the same point that trucks are not taxed enough.

Mr. Pancoast's projected tax schedule would enable Ohio to obtain \$220,000,000 a year from its motor vehicles at an average annual cost to the private motorist of \$40. The \$220,000,000 is more than one-half as much again as the \$136,310,000 collected in 1951 at an approximate cost of \$72.11 to the private motorist (average annual tax paid by sedan owner in United States).

According to engineers, this tax proposal contains more data on responsibility for highway costs than any collated before. It contains two unique ideas: advocacy that "axle-miles" be used to measure road usage instead of the customary ton-miles or vehicle-miles; and the separation of tax responsibilities for tractor-trucks and the trailers and semitrailers they tow.

Mr. Pancoast hopes his study of the "incremental method" will encourage others to improve it, and use the data thus far found.

Folder on Concrete Piles

A folder describing methods of placing concrete piles is offered by the MacArthur Concrete Pile Corp., 18 E. 48th St., New York 17, N. Y. Piles discussed include the compressed-concrete straight-shaft type, the permanent-cased type, and the composite type of concrete and wood or pipe. The company's service ranges from taking of borings to placement of piles.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 743.

helps you meet them

How Parsons & Fife overcame difficult problem

Utah state engineers know how to write a stiff set of specifications... and that's exactly what they did for the new 55 foot expressway between Salt Lake City and Parley's Canyon.

For this job, they required a base course of 1" maximum, with 45-65% passing the No. 4 screen, 35-55% the No. 40, and not more than 2% of minus 200 mesh material.

To produce sufficient minus No. 4 and 40 material required a close roll setting, yet a ½" clearance produced more fines than specifications allowed.

A problem? Not for Parsons

& Fife of Brigham City, the contractor. Because they owned a portable PIONEER 46VE plant, it was a simple matter to open the rolls to ⅝", then, while the plant was running, gradually close the jaw setting to the precise position at which specifications were met.

Result: Despite 52% crushing, an average production of 1750 (and sometimes 2,100) tons of specification material per 8 hour shift. Once again, a smart contractor, with the PIONEER EDGE on his side, met a tough set of specifications and still finished his job ahead of schedule.

adds
PIONEER's
as the
s. Each

operating,
mary and
acteristic
capacity.
removed
plant to
r. Gives
plants.

Have the Pioneer Edge

on your side—Parsons & Fife are typical of hundreds of experienced contractors who have learned that PIONEER equipment helps them produce the extra tons needed to gain a competitive advantage when bidding is close.

What are your needs? Check the coupon for details, specifications, and information on PIONEER equipment that will help you cut costs on your next job.

PIONEER ENGINEERING WORKS, INC.
1515 Central Avenue • Minneapolis 13, Minnesota
(SUBSIDIARY OF POOR & COMPANY • CHICAGO)

● Please send me information on the equipment checked.

- | | | |
|--|--|---|
| <input type="checkbox"/> JAW CRUSHERS | <input type="checkbox"/> GRAVEL PLANTS | <input type="checkbox"/> APRON FEEDERS |
| <input type="checkbox"/> ROLL CRUSHERS | <input type="checkbox"/> WASHING PLANTS | <input type="checkbox"/> MECHANICAL FEEDERS |
| <input type="checkbox"/> ROCK PLANTS | <input type="checkbox"/> BITUMINOUS PLANTS | <input type="checkbox"/> VIBRATING SCREENS |
| <input type="checkbox"/> ORO FEEDERS | <input type="checkbox"/> BITUMINOUS PAVERS | <input type="checkbox"/> CONTINUOUS CONVEYORS |

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

Off-Highway Truck Has 60-Ton Capacity

A new off-the-highway truck with a gross vehicle weight of 240,000 pounds has been announced by Dart Trucks, 2621 Oak St., Kansas City, Mo. Two Buda Super diesels totaling 700 hp supply power to rear-wheel tandems through hydraulic torque converters. The engines are mounted on the truck's underbelly half-way between front and rear. A Cummins NHRBS 600 or a Waukesha WAKDS and WAKR engine are optional.

The unit is 32 feet 8 inches long, 11 feet 8½ inches wide, and 11 feet 6 inches high. The fuel tank holds 250 gallons. Two radiators have a capacity of 34 gallons each. The unit uses twelve 18.00 x 25, 32-ply dual tires.

The truck has twin hydraulic hoists rated at 130,000 pounds, at



The new Dart off-the-highway truck has a gross vehicle weight of 240,000 pounds.



It's a smooth crossing always on the Lake Washington Bridge



Lake Washington Bridge, Seattle, Washington

SMOOTH, TIGHT, MAINTENANCE-FREE EXPANSION JOINTS ASSURED BY FLEXCELL* JOINT FILLER

Wherever concrete meets concrete, you can assure joints that stay closed and smooth, free of troublesome bulges and crevices, free of expensive maintenance—with Flexcell Bituminous Fibre Expansion Joint Filler!

Flexcell Joint Filler's durable, resilient cane fibre base is the reason. It is filled with millions of tiny air cells. These allow Flexcell to absorb pressure from expanding concrete without extruding, and spring back to keep the joint closed when the concrete contracts. This guards against

bulging or opening of the joint—practically eliminates maintenance!

Low In Cost

Flexcell Joint Filler is easy to handle, easy to work with. Provides neat, finished joints without trimming. It is impregnated with asphalt to resist moisture—and protected by the patented Ferox® process against dry rot and termites. Withstands toughest service, severest weather conditions—saves on maintenance year after year. Yet with all this, it is *low in both initial and installed cost!*

Flexcell Joint Filler has long been specified by leading engineers, contractors and architects—as well as the United States Army, Navy and other Federal, State and Municipal agencies. It will pay you to discover the reasons why... *before* you start your next job!

Mail coupon below for complete information on the advantages and economies of using Flexcell Joint Filler for pavements, runways, sidewalks, curbs, gutters, driveways, concrete floors. No cost or obligation!

Another **CELOTEX** Product
REG. U. S. PAT. OFF.

FLEXCELL

REG. U. S. PAT. OFF.

BITUMINOUS FIBRE EXPANSION JOINT FILLER

The Celotex Corporation, 120 S. LaSalle Street, Chicago 3, Illinois

*Flexcell is a Trademark identifying Bituminous Fibre Expansion Joint Filler marketed by The Celotex Corporation.

MAIL COUPON TODAY!

The Celotex Corporation, Dept. CEM-43
120 S. LaSalle St., Chicago 3, Ill.

Without obligation, please send me complete data and prices on Flexcell Bituminous Fibre Expansion Joint Filler.

Name _____

Address _____

City _____ Zone _____ State _____

1,000-psi pressure. Hoists have built-in snubber and pull-down mechanism. The hydraulic system is also used for steering power. A hydraulic pump is connected to each engine so that the system is active with one engine stalled.

For further information write to the company, or use the Request Card at page 18. Circle No. 815.

1953 Light Trucks

Automatic transmission in 1953 GMC light trucks is announced by the GMC Truck & Coach Division, General Motors Corp., 660 S. Blvd., E., Pontiac 11, Mich. The Hydra-Matic drive will be available optionally for trucks in Series 100 through 250. It combines fully automatic operation with the provision for ratio or range selection by the driver for best operation under varying conditions. Unlike automatic transmissions of the torque-converter type, the Hydra-Matic has the ability to transmit engine-breaking force to the rear wheels.

The truck line also introduces a new 228-cubic-inch displacement GMC 6-cylinder in-line engine that develops 105 hp under compression ratio of 8:1 and a new 248-cubic-inch engine that gets 125 hp with a compression ratio of 7.5:1. The new engines have flat-top aluminum pistons, large intake and exhaust manifolds and valves and a dome-shape combustion chamber with large bore and short stroke dimensions.

Increased braking power has been installed on GMC Models 150 through 350 with Duo-Servo brakes. Front axles have also been improved.

For further information write to the company, or use the Request Card at page 18. Circle No. 793.

Bulletin on Diesel Shovel

A new bulletin describes the Marion 111-M diesel shovel with 4-cubic-yard dipper. The unit is available as standard shovel, long-range shovel, or dragline. Features include Ward - Leonard - Electric swing and Marion air control, as well as a new type rigid gantry. The hinged gantry, which changes angle as the boom is raised or lowered, is optional. Accessibility of the machinery deck is another feature mentioned in the booklet.

To obtain this literature write to Marion Power Shovel Co., Marion, Ohio, and request Bulletin No. 402-A, or use the Request Card at page 18. Circle No. 755.

TRANSITS and LEVELS

**NEW
OR
REBUILT
SALE OR RENT**

**HEADQUARTERS FOR
REPAIRS — any make**



We will buy or trade in old Transits, Levels, Alidades, etc. Send instruments for valuation.

Write for Catalog EC-34 of Engineering Instruments, Engineering Field Equipment and Drafting Room supplies.

WARREN-KNIGHT CO.

Mfrs. of Transits & Levels

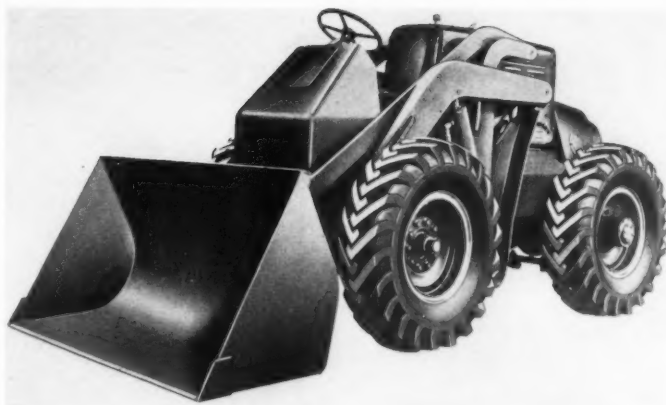
136 N. 12th St., Philadelphia 7, Pa.

CONTRACTORS AND ENGINEERS

New Front-End Loader Uses Crowding Action

A 1½-cubic-yard rubber-tired front-end loader with 4-wheel drive is announced by the Transmission & Gear Co., 10421 Haggerty Ave., Dearborn, Mich. The Model TLF-150 Transco Load Master uses a loading method of rocking the bucket into the pile that is said to give full bucket loads without straining the loader or spinning tires. This loading action results from the rocking motion of dual hydraulic cylinders, assisted by traction of the loader.

The unit has a rear-mounted industrial engine, a torque converter said to double engine torque to handle heavy loads, rear axle assemblies of 16:1 ratio, and Transco clutch-type reversing transmission. The planetary-type reversing transmission with spring-loaded clutches running in oil, eliminates an engine



The Model TLF-150 Transco Load Master.

clutch. There are four forward and reverse speeds. The manufacturer stresses the accessibility of vital parts for maintenance.

The unit has short wheel base and

extended bucket-lift and dump arms that allow a 120-inch dumping position and 137-inch clearance under the bucket hinge. Bucket reach is 3 feet. Turning radius at the front

wheel is 18 feet. A 48-inch normal carry position allows unrestricted operator vision in all directions.

For further information write to the company, or use the Request Card at page 18. Circle No. 826.

Stud-Welding Services

How a manufacturer of stud-welding equipment supplies the needs of the purchaser of his products is told in a booklet by KSM Products, Inc., Merchantville, N. J. The company offers not only its line of stud-welding equipment, studs, and portable guns, but also assistance in engineering and design problems encountered in electric-arc stud welding. The booklet shows the company's service and production facilities.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 785.

WATSON-STILLMAN HYDRAULIC POWER TOOLS FOR INDUSTRY



HYDRAULIC JACKS and HAND PUMPS

These sturdy jacks, with either independent or integral pumps, are useful for many jobs in construction and maintenance. Capacities to 500 tons. Pumps, single and double plunger types, with reservoirs of different capacities for operating small hydraulic tools, jacks and hydraulic equipment, and for general hydrostatic testing purposes. Jacks or pumps available separately.

Bends standard, extra heavy and double extra heavy steel pipe from ½ inch to 2 inch, as well as standard weight pipe up to 3 inch diameter. Also solid mild steel bars up to 2 inch diameter.



PORTABLE PIPE BENDERS

WIRE ROPE SHEARS

W-S wire, cable and bar shears provide years of trouble-free general service. They are light and portable for convenient on-the-job use.

Horizontal and Vertical Operation. Single plunger type with air engine. Portable for hydraulic machinery, hydraulic tools and a wide variety of hydrostatic testing operations. Pump discharge pressure capacities 2,000 to 6,000 lbs. per sq. in. Operates from stationary or portable compressor. Requires single connection to air line.

AIR ENGINE PUMPS

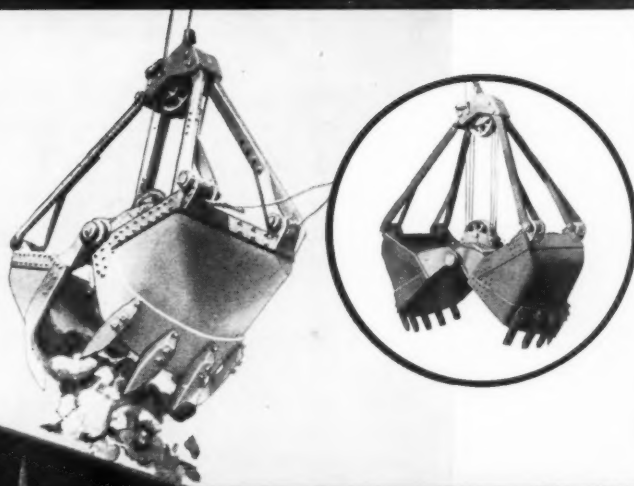


Send for your copy of Bulletin A-5

HYDRAULIC POWER TOOLS

WATSON-STILLMAN FITTINGS DIV.
H. K. PORTER COMPANY, INC.
Roselle, New Jersey

Choose the OWEN ROUND NOSE



for Rigorous Requirements

If you've had occasion to use a round-nose hand shovel you'll understand why—

An Owen Round-Nose Bucket is uncommonly efficient in handling rock and broken slag and in exceptionally hard excavating and dredging operations.

As compared to a straight-nose shovel, the round-nose penetrates hard earth more readily—"noses" its way into broken rock with less effort—and consistently comes up with a "bigger load." And like an egg it is stronger due to its curved surface.

In the Owen line is a bucket for every specialized and general digging and rehandling purpose.



BUCKETS AND GRAPPLES

THE OWEN BUCKET CO.

5030 Breakwater Avenue • Cleveland, Ohio

Branches: New York, Philadelphia, Chicago, Berkeley, Calif., Fort Lauderdale, Fla.

when you need top performance



make dependable GLADDEN ENGINES your choice

3 POWER PLANTS
4 HP • 5 HP • 7 HP

Gladden engines' capacity for round the clock rugged work makes it the preferred engine by today's contractors. Work records kept on the service line of these engines shows substantial savings in power costs. Good service with little maintenance cost is the cry of small and large contractors when selecting power.

GLADDEN OPENS KANSAS CITY SALES AND SERVICE PLANT

10 WEST 19TH STREET, KANSAS CITY 8, MO

This new Kansas City outlet means faster delivery and quicker service. This is another step in Gladden's network of distributors throughout the world to offer you the finest in sales and service on Gladden engines.

REMEMBER, BUY POWER PLUS
... BUY GLADDEN ENGINES
For further information write



GLADDEN PRODUCTS CORPORATION

Now In the 31st Year of Engine Building
835, Dept. 100, West Colorado, Glendale 4, California

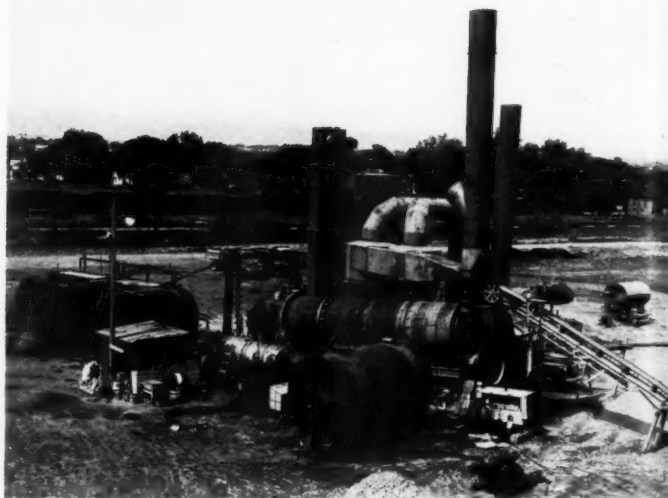
Parking Apron Paved With Asphaltic Mix

Lowry Airbase Apron Calls for Precision Work To Meet
"Impossibilities" in Project Specifications

• THE Project Manager on paving for Western Paving Construction Co. of Denver, Colo., Harold Stillman, is not what you would call a laboratory-minded engineer. Most of his work has been on the contracting side of the fence. But when this was written, Harold Stillman was carrying a shovel and a bucket around with him in his car, looking for a size 80 sand which Colorado

doesn't have. Stillman was fairly sure about that, because he had reached the point where he dreamed about impossible sand at night.

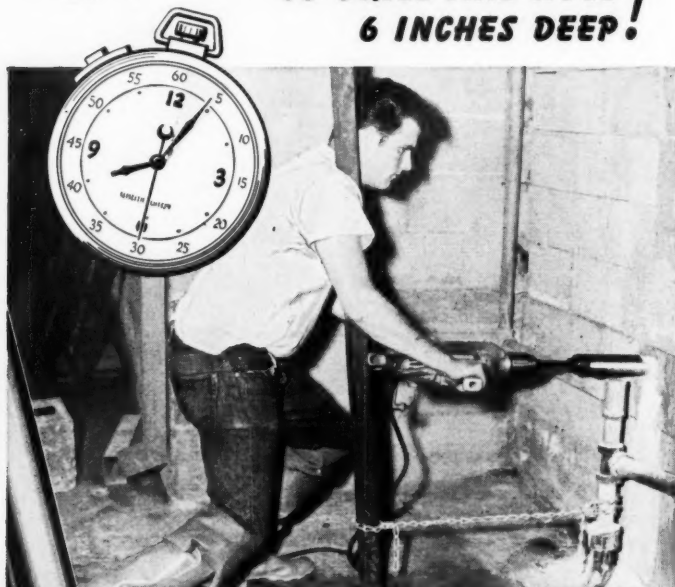
The cause of his dilemma was a \$1,336,222 contract job with the Corps of Engineers for a parking apron at Lowry Air Force Base in Colorado. This job included some select base and asphaltic concrete whose gradations had been so closely



This Standard asphalt plant was set up along a river bottom in Denver to supply hot mix to the Lowry Air Force Base job.

Ray Day Photo

4 1/2 MINUTES TO DRILL THIS HOLE! 6 INCHES DEEP!



TILDEN ROTARY KONKRETE KORE DRILLS

cut reinforcing rods in concrete!

Patented Core
Slot Expels
Cuttings
Automatically!

Under the actual on-the-job conditions shown above, a Tilden 2 1/2" diameter Rotary Concrete Core Drill cut through 6" of concrete—including crossed steel reinforcing rods—in just 4 1/2 minutes! The straight, clean, ready-to-use holes permitted immediate running of 2" pipe. You consistently get 5 to 7 times more holes without resharpener with a Tilden Drill—and free factory sharpening is still available on sizes from 3/16" to 4" diameters. Tilden Drills can be used with ordinary electric or rotary air motors. Interchangeable shanks are available for any depth hole.

Find out about this revolutionary drill TODAY! Consult our Engineering Department without obligation, on your drilling problems.

Sold Through Distributors Everywhere

U. S.
Patent No.
Re. 23539

TILDEN TOOL MANUFACTURING COMPANY
215 Los Molinos, San Clemente, Calif.

Gentlemen: Please send me without obligation, complete information on the Rotary Concrete Core Drill.

Name _____ Title _____
Company _____
Address _____

WRITE TODAY
for free illustrated
catalog. Please de-
scribe your drilling
problem in detail.

set that unusually precise field construction was necessary. The design was planned to meet the loading and fuel-spillage characteristics of aircraft using this training center for Air Force personnel, but even the Corps of Engineers' Resident Engineer, Hermann Ullrich, admitted near-impossibilities in some aspects of the specifications.

Some of the practical requirements faced by Stillman's men were interesting indeed. They had to remove all No. 200 mesh material from the mineral aggregate, but leave the

No. 80 mesh in. It turned out to be a nearly impossible trick. Material classified as 0.02 mm—considerably finer than No. 200—had to be measured and held below 3 per cent. Fractured surfaces had to be made for 75 per cent of the base-course material. In effect, all No. 200 material was forced out of the hot-mix aggregate, and this had to be replaced by limestone dust or raw cement, making a 5-bin pull. Imported granite had to be added to the base to meet the fractured-face requirements. And the subgrade

THE *Best* RULE TO FOLLOW WHEN YOU BUY A MIXER...

Be Sure it's A.G.C. RATED!

• AGC RATED pavers and mixers HAVE to meet rigid specifications as to sizes and mixing capacity.

That's why Mixer "OUT-PUT" is a known quantity when you buy an AGC RATED Mixer.

Protect Yourself—Be Sure the portable concrete Mixer you buy is AGC RATED!



Mixer Manufacturers Bureau

Affiliated with the Associated General Contractors of America, Inc.

CHAIN BELT COMPANY
Milwaukee, Wisconsin

CONSTRUCTION MACHINERY CO.
Waterloo, Iowa

THE FOOTE CO., INC.
Nunda, N. Y.

THE JAEGER MACHINE CO.
Columbus, Ohio

THE KNICKERBOCKER CO.
Jackson, Michigan

KOEHRING COMPANY
Milwaukee, Wisconsin

KWIK-MIX COMPANY
Port Washington, Wisconsin

THE T. L. SMITH COMPANY
Milwaukee, Wisconsin

WORTHINGTON CORPORATION
Construction Equipment Division
Plainfield, New Jersey

CONTRACTORS AND ENGINEERS

density had to be 100 per cent of modified Proctor.

The job was so unusually precise that visiting contractors were warned, prior to placing their bids, that the specifications meant what they said, and Stillman realized from the start that it would be a tough one to build. But even with a contract price of \$10 per ton for asphaltic concrete, Western Paving Construction Co. failed to bid on another major extension at Lowry.

Western's contract covered all principal parking-apron improvements for 1952, and included about 150,000 cubic yards of grading; 60,000 tons of subbase; 40,000 tons of special select base; and 30,000 tons of asphaltic-concrete pavement. The work was localized on three parking apron areas and a short 200-foot taxiway near the administrative center of the base. Started March 15, 1952, the project was expected to be complete at least before the main winter snows set in. Completion was set for September 28.

Earthwork Subbed to Kiewit

All earthwork, along with the production and installation of a 10-inch granular base course of 2½-inch-minus material, was subcontracted to Peter Kiewit Sons' Co. of Omaha and Denver. The Kiewit organization has built Corps of Engineers airports all over the west, and it quickly moved in to do the grading. A fleet of Caterpillar DW20's was used for the earthwork, and to develop the required 100 per cent modified Proctor densities, a 60-ton Southwest compaction roller was brought in.

As Kiewit's crews dug into the earthwork, however, the presence of objectionable material in the subgrade caused extra work, because these places had to be dug out and wasted. The eventual overrun from this work brought the grading yardage up to 150,000 from 115,000 cubic yards, and to some extent at least, delayed the work.

The 10-inch base course which was placed under the Kiewit subcontract was a good granular material up to about 2½ inches in size. It, too, was compacted by the Southwest compaction roller to develop its density.

Select Base is Harder

Not so easy was the installation of a select 6-inch base course of 1-inch-minus crushed rock. This base course lies over the 10-inch granular base, and directly under the asphaltic concrete. It was not easy to produce.

In the belief that a 75 per cent fractured surface could be produced by taking the sand out of pit-run

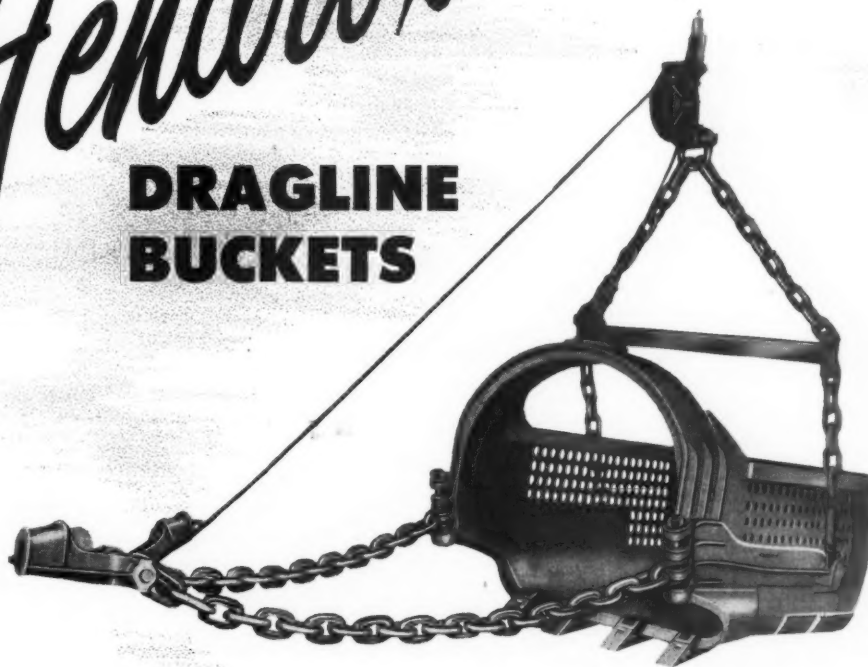
(Continued on next page)



Workmen lay asphaltic concrete on one of the apron strips with the aid of a Barber-Greene Tamping-Leveling Finisher. Ray Day Photo

No matter how you look at it...

Hendrix
DRAGLINE
BUCKETS



ARE YOUR BEST BUY!

3/8 to 40 Cubic Yards

A TYPE & SIZE FOR
EVERY DIGGING PURPOSE

HENDRIX
Lightweight
DRAGLINE
BUCKETS

Hendrix Buckets May Be Special Ordered
WITHOUT PERFORATIONS

HENDRIX MANUFACTURING CO., INC.

MANSFIELD - LOUISIANA

ALL WEATHER
DECALS
FOR LARGE & SMALL NEEDS
Save 25% NO SALESMAN TO CALL
YOU SAVE IT ALL
FOR PRICES AND SAMPLES WRITE TO:
STORER DECAL CO.
1558 SO. MARKET, WICHITA, KANSAS
10 DAY DELIVERY

Parking Apron Paved With Asphaltic Mix

(Continued from preceding page)

material and crushing the bigger material down, a Cedarapids Master Tandem plant was set up near Morrison, Colo., in a pit containing a high percentage of oversize boulders. To help reduce these larger stones, a 22 x 36 jaw crusher was put in ahead of the Master Tandem.

It was soon apparent that the material would not meet the specifications. To correct the difficulty, fractured granite from a mountain slide was added at the pit, and in addition, fine manufactured sand was brought in to Lowry Field and added to the windrow. Since all of this material had a fractured face, it brought the percentage up to acceptable limits.

The material was then sized by a Wood windrow sizer, to get the right amount installed. A Model 36 Wood Roadmixer was also brought in to make a pass through this select base material, adding the necessary water to bring its moisture content up to approximately 7 per cent. According to Project Manager Stillman, there is little doubt that the excellent blending and mixing job this machine performed was responsible for getting acceptable densities later on, for after the Wood Roadmixer had finished its pass, No. 12 Caterpillar motor graders cut the material out in 2-inch lifts and spread it across the area. Working directly behind the motor graders were two Bros rubber-tire rollers pulled by a McCormick-Deering W9 and a Farmall M tractor. Several steel-wheel rollers were also used, including two 3-wheel 12-ton Buffalo Springfields and a 12-ton tandem Huber.

The original specifications, incidentally, had set up a steel-wheel roller hour for every 100 square yards of base course. It would have required 12 rollers to meet that provision. The provision was relaxed after the matter was taken to Omaha—where it turned out to be a mistake in the specifications—and Western Paving was simply held accountable for meeting results and densities in this item from that point on. At the time there were few 3-wheel rollers in the Denver area.

The select base was finished to fine tolerance and primed about 48 hours ahead of paving by an application of MC-1, 0.3 gallon per square yard, applied at 175 degrees F by a Littleford distributor.

Hot-Mix Mineral Difficulty, Too

There was considerable difficulty producing the mineral aggregate for the plant-mix, too, because gradation and soundness requirements were such that extremely precise control was necessary in the manufacturing process. Specifications called for the following gradation limits and other characteristics:

Screen Size	Percent Passing	
	Binder Course	Surface Course
1-inch	76-100	89-100
3/4-inch	64-82	78-90
3/8-inch	42-56	69-83
No. 4	38-54	55-70
No. 10	25-41	42-56
No. 20	12-23	30-43
No. 40	7-16	22-33
No. 80	4-8	14-22
No. 200	4-8	4-7
Asphaltic Cement (120-150)	4-6 per cent	5-6 1/2 per cent

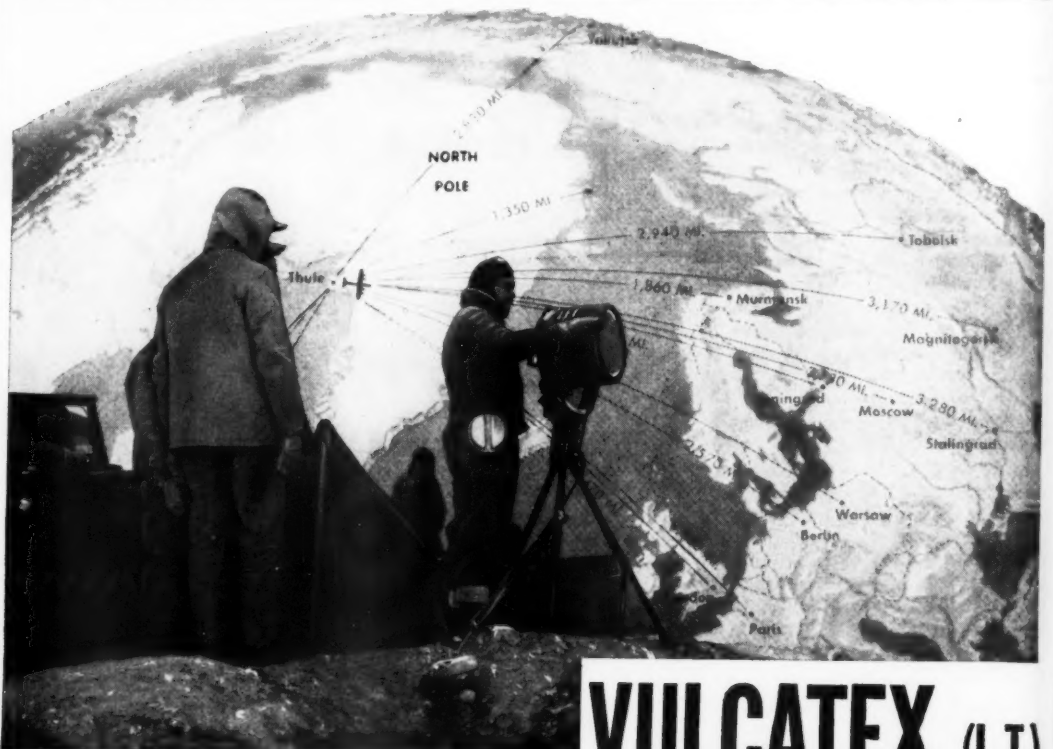


Harold Stillman, Project Manager on the Lowry Air Force Base paving job; Major R. A. Ralston, Corps of Engineers; Chief Inspector A. F. Dickey, Corps of Engineers; R. W. Cummins, General Superintendent; and Technician W. J. Horn of the Corps of Engineers.

Marshall stability for both courses was specified at 1,000 plus, and Marshall flow for both courses was set at 16 or less. The percentage of voids in the binder course was set at 3 to 5; at 5 to 7 on the surface course. Percentage of voids filled with asphalt was set at 75 to 82 on the binder course; 65 to 72 on the surface course.

The gradation tolerances were somewhat misleading, however, because in another part of the specifications there was a provision holding the gradations "right down the middle" with tolerances all 5 per cent or less plus or minus. This provision made the manufacturing job precise indeed.

Again the Kiewit organization was called in, this time to manufacture the mineral aggregate and deliver it to Western's hot plant in Denver. The material was produced at Kiewit's plant at Table Mountain



VULCATEX (L.T.) OUT COLD ON OPERATION 60 DEGREES BELOW ZERO



Through the announcement of the Defense department the public now knows about operation "Blue Jay" only 900 miles from the North Pole. This modern engineering miracle is a full scale year round bomber base. Temperatures of minus 60° F are common and winds drive rain or snow against the structures at 150 miles per hour. In such cold even rubber and steel become brittle.

The A. C. Horn Company Inc. has the honor of having supplied over 40,000 gallons of its special low temperature Vulcatex Elastic Caulking Compound. This was used in the joints and between the panels of the many pre-fabricated structures for water-tight, air-tight seals.

Operation "Blue Jay" in spite of the inhuman cold is now described

In a good basalt deposit where soundness was good and where the faces would be all fractured when the crushers got through. Two sizes of aggregate were produced, with finer sand added later on.

One of the most troublesome problems on the project soon cropped up, because the fines in the mix contained slightly more than the allowable 3 per cent of 0.02-mm material which Corps of Engineers studies have shown to cause base failures. It was impossible to remove this objectionable material without also getting rid of enough of the 80-mesh fines to bring that percentage under allowable limits. The problem has been handled by leaving the basalt rock dust in the aggregate, and adding 40-mesh sand tailings from the Brannan Sand & Gravel Co. plant at Denver. But the stockpiles around the hot plant had been so costly to produce that they could

not be used on local commercial work, which Western Paving Construction Co. often does, and the hot plant had to sit idle for several months while enough grade was built to start mixing this material through.

And more trouble: Western has traditionally had an asphalt supply contract with Frontier Refining Co. at Cheyenne. Frontier and most other refining companies in the area could not meet the stringent 100 per cent naphtha spot test. Empire Petroleum Co. of Denver agreed to produce the material on special order.

If it seems at this point that the Corps of Engineers and its specifications are being criticized, this is not the intention. Rather, the purpose of this article is to point up the practical difficulty of creating bases and pavements for air terminals which have to accommodate the

planes of tomorrow. Research by the Corps of Engineers and many other agencies has fairly well shown beyond a doubt that some of the hit or miss pavements of other years will not stand today's wheel loads, blast temperatures, blast velocities, and fuel spillage. It takes a higher-type pavement, and the contractors who build those pavements had better read the fine print in the specifications.

Asphalt Plant Setup

The asphalt plant was a 4,000-pound Standard batch plant, with an oversize 7 x 30-foot dryer fired by Hopkins burners. It was set up along the South Platte River bottomlands near the 8th Avenue Viaduct in Denver, about 8 miles dead-haul distance from the job. This distance, coupled with city traffic conditions, made a minimum of 14 batch trucks necessary.

Two sizes of aggregate and two sizes of sand were stockpiled at the plant over feeder tunnels. Since the fine material will bridge over quickly if too much is shoved in by the D8 and D6 feeder dozers, the feeders had to be equipped with special Syntron vibrators to make the feed more positive. The asphalt was stored in two 8,000 and one 6,000-gallon steel tank, heated by steam coils circulating from a Cleaver-Brooks automatic steam generator. This boiler also heated the No. 6 fuel oil which fired the Hopkins burners, heated the steam jacketing on the asphalt lines, heated the hot-pot insulation, and operated the pugmill rams.

Auxiliary equipment around the plant included a Caterpillar D318 which turned the dryer, an International UD-24 diesel-electric generating set for power, a Caterpillar D-13000 motor for operating the dust collector, and a Caterpillar D17000 engine which turned the pugmill and generated power for the blower of the Hopkins burner.

The asphalt was weighed, along with the re-screened mineral aggregates. Twenty pounds of mineral dust was added to each batch, and the rented batch trucks took from 4 to 6 batches per load on their trips from the hot-mix setup out to Lowry Air Force Base. Normal production of this plant was about 125 tons per hour, and the Lowry mix was turned out at about 100 tons an hour.

The plant-mix asphaltic concrete left the plant at a mix temperature close to 275 degrees, and arrived at the laydown site with a loss of only 15 to 25 degrees. It was placed in 10-foot strips by a Barber-Greene Tamping-Leveling Finisher. The laydown process called for two 2-inch compacted courses, which of course required heavy rolling to develop the Marshall 98 per cent density requirement.

Both 12-ton 3-wheel Buffalo-Springfield and 12-ton Huber tandem machines were used. In addition, a Bros rubber-tire roller pulled by a small Farmall tractor or a truck helped to develop density and improve the surface texture.

To key in the asphaltic concrete to previously placed portland-cement concrete apron pavement, considerable concrete sawing had to be done. Two-inch cuts were made along the sides of the keyways—they are about 6 feet wide—and the center was gouged out by pneumatic guns and moil points.

The finished asphaltic concrete pavement will accommodate parked airplanes which use Lowry Air Force Base, and Corps of Engineers technicians expect the pavement to stand up better with less maintenance cost than was possible with previous pavement designs.

Lowry an Important Airbase

Often called the home of the Air Force armorer, Lowry Air Force Base today is a bustling installation playing an ever-increasing part in the tough technical training program of the Air Training Command. It specializes in training officers and airmen in the technical specialties needed to keep USAF planes flying all over the world. Lowry first came into existence in 1937, and was

(Concluded on next page, col. 3)



ALFRED HOPKINS & ASSOCIATES
Consulting Engineers
NORTH ATLANTIC CONSTRUCTORS
General Contractors

CAULKING COMPOUND KEEPS "BLUE JAY," GREENLAND, AT

as "Snug" and the workers and service men enjoy better than normal health. Vulcatex (L.T.) Caulking Compound keeps the heat in and the fierce cold out. Thousands of other important buildings in the United States and throughout the world are also protected by Vulcatex in every climate and type of structure.

Vulcatex, a product of the Horn Research Laboratories, has outstanding properties of plasticity, adhesion and long life. Many applications

over 20 years old are still completely effective. You can rely on the performance of any Horn product. This has been true for 56 years.



A. C. HORN COMPANY, INC.,
Long Island City 1, N. Y.

Please send me ☐ complete data on
VULCATEX



☐ free copy of your
106-page Construction
Data Handbook

NAME _____ TITLE _____

FIRM NAME _____

ADDRESS _____

CITY _____ STATE _____

HORN est. 1897
A. C. CO., Inc.

Manufacturers of materials for building maintenance and construction
LONG ISLAND CITY 1, N. Y. • Los Angeles • San Francisco • Houston
Chicago • Toronto SUBSIDIARY OF SUN CHEMICAL CORPORATION

APRIL, 1953

Plastic-Pipe Information

Two new illustrated leaflets on flexible and rigid plastic pipe are offered by Carlon Products Corp., 10225 Meech Ave., Cleveland, Ohio. They tell what Carlon pipe is, how it is installed, and how the price compares with that of metallic pipe.

Diameters and weights are listed for rigid L-pipe in sizes from 1/2 to 2 inches; and diameters, calculated burst pressures, weights, and shipping lengths are tabulated for flexible pipe in sizes from 1/2 to 6 inches.

To obtain this literature write to the company, or use the Request Card in at page 18. Circle No. 757.

Parking Apron Paved With Asphaltic Mix

(Continued from preceding page)

named Lowry Field in 1938, honoring Lieutenant Francis B. Lowry, an American aviator killed in action in World War I.

The field today conducts fire fighting and crash rescue, intelligence career guidance, comptroller, guided missiles, supply, armament and photography training, and is an aircraft gunnery center. The 3415th Gunnery Group today is using B-29 and F-51 aircraft to train young airmen as gunners for medium bombardment planes.

Brig. Gen. John T. Sprague, Base Commander, is a veteran commander of Air Force training bases and has a background of a quarter century of flying. He is a Command

Pilot, Combat Observer, and Air Observer. He served with the Ninth Air Force during World War II.

Field Personnel

The Denver area office of the Corps of Engineers is under command of Lt. Col. Robert Trout, and field operations are under Resident Engineer Hermann Ullrich.

Western Paving Construction Co.'s work was under the direction of Project Manager Harold Stillman, with R. W. Cummins as General Superintendent. Walter Coe was Laydown Foreman and Delbert Vaughn was in charge at the asphalt plant.

Earth-Boring Machine For Horizontal Holes

A machine for boring horizontal holes up to 150 feet in length is made by the Gofer Boring Machine Co., P. O. Box 102, Clayton, Mo.

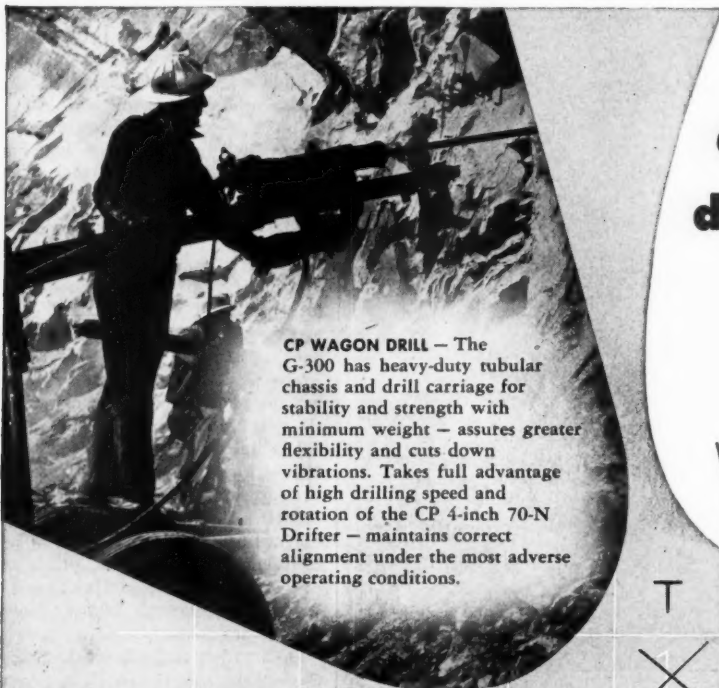
CHOOSE a CHAUSSE Model CJD-400 for your SMALL jobs



This new addition to the CHAUSSE line of Spreadwell Distributors is specially designed for ease in manipulating all controls. Note the operator's platform at left rear, where all controls are within easy reach. Like all CHAUSSE spreaders, this new model is the last word in rugged, dependable, efficient performance.

Write for specifications.

CHAUSSE Manufacturing Co., Inc. - 4453 Fourteenth St. - Detroit 8, Michigan
Amrocta Co., 50 Church St., New York 8, N.Y. Cable Address: Kellydick



CP WAGON DRILL - The G-300 has heavy-duty tubular chassis and drill carriage for stability and strength with minimum weight - assures greater flexibility and cuts down vibrations. Takes full advantage of high drilling speed and rotation of the CP 4-inch 70-N Drifter - maintains correct alignment under the most adverse operating conditions.

when
dealing with
deadlines

use
CP
equipment



CP DIESEL AND GASOLINE DRIVEN PORTABLE AIR COMPRESSORS - available in ranges from 60 cfm to 600 cfm, CP Portable Air Compressors incorporate the CP Gradual Speed Regulator which reduces engine speed proportionately when air demand falls off.



CP PORTABLE SLUDGE PUMP - widely used on dam jobs and similar construction projects - handles up to 15% solids. No costly parts exposed to abrasion - operates on ejector principle.

Chicago Pneumatic Tool Co.,
8 East 44th Street,
New York 17, N. Y.



Chicago Pneumatic

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES



It cuts holes with a diameter from 2 to 24 inches.

Six-foot-long boring bars are driven in by an air motor, one behind the other, to make a guide hole. A disk-like slusher with water circulating through it cuts the hole to diameter size and makes the spoil a semifluid mixture.

A slush puller of the same diameter as the slusher is pulled through the bore by winch, pushing out the spoils ahead of it.

For further information write to the company, or use the Request Card at page 18. Circle No. 730.

Dump-Body News

The Marion Metal Products Co., Marion, Ohio, manufacturers of dump bodies and hydraulic hoists, has introduced a new company publication—*Dump Body Business*. The new publication is designed to fill the need for specialized news coverage of the dump-body and hoist field.

It is being circulated to truck dealers, contractors, and others interested in dump bodies, and will appear every month. The first issue of the magazine was published in January.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 810.

J. H. King for Galion

After 27 years as Sales Representative in central Ohio for The Galion Iron Works & Mfg. Co., Galion, Ohio, Lewis C. Lobb has retired. He is succeeded by Joseph H. King, who will handle the company's motor graders and rollers in this territory. Mr. King, who spent a year with Galion before his wartime military service, returned to the company in 1950.

d Air
Ninth
II.

of the
com-
it, and
esident

struction
rection
illman,
General
e was
Delbert
spahlt

ne
s

horizontal
length is
machine
n, Mo.

r from

rs are
ne be-
guide
water
ne hole
es the

diam-
through
out the

rite to
request
30.

ts Co.,
ers of
hoists,
y pub-
s. The
to fill
s cov-
hoist

truck
ers in-
d will
t issue
hed in

rite to
request
810.

Repre-
or The
Co.,
ob has
Joseph
com-
ers in
pent a
artime
to the

ENGINEERS



Wire Bands and Tool Make Hose Connections

A new hose connection consisting of bands of soft steel wire is available from Squire-Cogswell Co., 4140 N. Kedzie Ave., Chicago 18, Ill. No bench or vise is needed to apply the bands, and they may be attached anywhere. A hose tool for applying the bands is made in two sizes, the Junior for those up to 3/4 inch, and the Senior for bands 1 inch and over. The bands are available for hose from 1/4 to 3 inches in diameter.

The bands give a tight, permanent, and rustproof connection, and can be used equally well for air, steam, water, or oil hoses, according to the manufacturer. The small joint they make has no shoulder to catch or foul when moving the hose from place to place. As the same band will fit hose of many different plies, only a small stock of sizes need be carried, the manufacturer points out.

For further information write to the company, or use the Request Card at page 18. Circle No. 764.

Garden State Parkway: First Annual Report

"1952, Year of Decision" is the New Jersey Authority's slogan for its first annual report on the Garden State Parkway. The 20-page booklet, complete with photographs and a map of the Parkway, describes its progress from the creation of the New Jersey Highway Authority in 1952 (though enabling legislation dates back to 1945), through the various stages of financing, taking of bids, and partial construction. It is hoped to open the entire 165-mile Parkway to traffic in 1954.

The Authority is laying special emphasis on safety, and a speed limit of 50 miles per hour is an important means to this end. Other safety measures include restrictions on entrance to and exit from driving lanes, and on roadside use for commercial or residential purposes; safe separation of opposing streams of traffic; "singing safety lanes"; elimination of steep grades and vertical curves; ample stabilized shoulders to allow disabled vehicles to be disengaged from the rest of the traffic; acceleration and deceleration areas near interchanges; and varied design to reduce the hypnotic effect on drivers of long monotonous stretches of road.

The Annual Report, which may be obtained by writing to the New Jersey Highway Authority, 1035 Parkway Ave., Trenton, N. J., includes a balance sheet and a list of banks participating in temporary loan agreements.

U. S. Rubber Appoints Three

Three personnel appointments were recently made by United States Rubber Co., New York, N. Y.

John F. Arthur, former District Manager of the San Francisco, Calif., branch, was named new Manager of U. S. Truck Tire Sales, and will establish his headquarters in Rockefeller Center, New York City. Richard M. Payson, who was formerly Manager of Farm Market Sales, succeeds Mr. Arthur as District Manager in San Francisco. John W. Carpenter is the new District Manager of the Denver, Colo., branch. He was formerly District Manager of the Fisk-Gillette Division in New York.

A New Earth-Moving Unit

A booklet on a 2-wheel tractor with interchangeable bottom-dump

wagon and scraper is available from The Heil Co., 3003 W. Montana Ave., Milwaukee 1, Wis. The unit, which is powered by a 200-hp Cummins diesel engine, has hydraulic steering.

The 20-cubic-yard dump wagon has clamshell-type doors. A single cable from the power-control unit pulls wagon doors to their open

position and up alongside the hopper. The scraper has a 3-piece replaceable blade. According to the manufacturer 60 per cent of the over-all weight is on the drive wheels so that drawbar pull is increased.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 703.

POWER PLANTS SPEED CONSTRUCTION

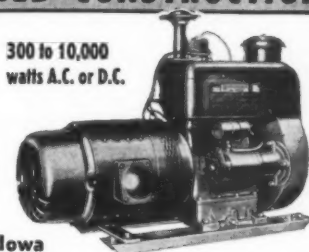
Use Power Tools—Flood Lights

Winpower Portable Electric Plants provide a dependable, low cost power source . . . speed up work performance by operating time and labor saving power tools. Winpower Nite-Hawk units give power plus built-in floodlights. Every contractor should use these high efficiency, quality built plants.

WRITE FOR LITERATURE AND PRICES

WINPOWER MFG. CO., Newton, Iowa

300 to 10,000
watts A.C. or D.C.



LOOK JOE! SAW SMOOTH—STRAIGHT OPENINGS

for PATCHES & TRENCHES with a . . .

SAVE TIME—MATERIAL—MONEY by

"SAWING BEFORE BREAKING" with a . . .

MODEL C-130
ONE OF 5
MODELS, GAS
OR ELECTRIC
POWERED

Save up to 50% in labor and material. Saw repair patches—water, gas, sewer and air line trenches in floors, streets, walks and highways. Save too, by sawing contraction joints in floors and highways . . . eliminate costly hand forming and spalling.

"4 OUT OF 5" BUY CLIPPER CONCRETE SAWS. Three-Point Suspension (see below) . . . the Patented Water Application which increases blade life and speed . . . perfect balance and dashboard controls for operating ease and maneuverability—these are the reasons WHY—"4 OUT OF 5" Buy Clipper!

Only minimum replacement material needed and is poured to straight, smooth edges.



Sawed lines confine breakout fracturing and speeds removal up to 50%.



Contraction joints in floors or streets eliminates spalling, 50% less seal and are maintenance-free.



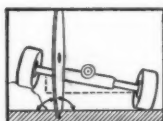
NEARLY 20 YEARS EXPERIENCE Sawing Concrete of All Types

The unqualified Clipper guarantee of satisfaction is backed by world-wide experience, the ability to select the finest materials and the "know-how" to put them together.



**YOU CAN DEPEND
ON CLIPPER
SUPERIOR
DIAMOND BLADES**

. . . guaranteed to . . . "Provide the fastest cut . . . at the lowest cost." Clipper alone can supply every necessary metal band . . . in over 36 specifications.



**THREE POINT "No-Bind"
SUSPENSION**

Three Point Suspension holds the blade straight and true in the cut—eliminates binding—drifting—sidewear and friction. Guarantees the longest possible blade life!

CLIPPER MASONRY SAW

. . . the ONLY saw in the world that will cut masonry materials of every size and description. Clipper outperforms them all for ONLY Clipper is "CONVERTIBLE" and has the Patented Features for flexibility. A Clipper Model to fit any job—any budget. Sold on FREE TRIAL . . . Priced from \$265.



MODEL HD
15 MODELS
PRICED FROM \$265

FREE TRIAL!

ORDER TODAY . . . on FREE TRIAL. Discover for yourself how Clipper will increase your profits by increasing your production at reduced costs. Clipper "ON THE JOB" FREE TRIAL guarantees satisfaction at no obligation.



THERE'S A CLIPPER FACTORY BRANCH NEAR YOU

**SAME DAY SERVICE
FROM YOUR NEAREST
FACTORY BRANCH—**

MR. CLIPPER

KANSAS CITY 8, MISSOURI
COAST TO COAST

- | | | |
|----------------|----------------|--------------------|
| • PHILADELPHIA | • BOSTON | • SAN FRANCISCO |
| • ST. LOUIS | • HOUSTON | • CINCINNATI |
| • CLEVELAND | • MILWAUKEE | • ATLANTA |
| • DETROIT | • ST. PAUL | • WASHINGTON, D.C. |
| • AUSTIN, TEX. | • INDIANAPOLIS | • BIRMINGHAM |
| • CHICAGO | • NEW YORK | • CHARLOTTE, N.C. |
| • LOS ANGELES | • PITTSBURGH | • DALLAS |
| | • DENVER | • KANSAS CITY |

IN CANADA—P.O. BOX 476, WINDSOR, ONTARIO

SOLD ONLY DIRECT FROM FACTORY BRANCHES

CLIPPER MANUFACTURING CO.

2803 N.W. WARWICK • KANSAS CITY 8, MO.

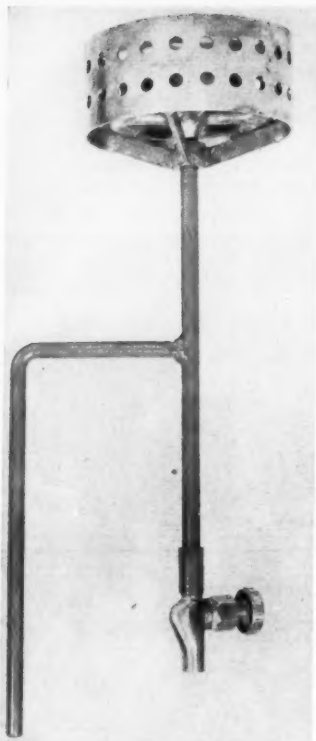
Send FREE Literature and Prices on:

- | | |
|---|---|
| <input type="checkbox"/> CLIPPER CONSAWS | <input type="checkbox"/> CONSAW DEMONSTRATION |
| <input type="checkbox"/> CLIPPER MASONRY SAWS | <input type="checkbox"/> CLIPPER DIAMOND BLADES |

No. 13-C

CITY _____ STATE _____

ADDRESS _____



New Acetylene Flare

A new acetylene flare for emergency night-time lighting has been announced by Air Reduction Sales Co., a Division of Air Reduction Co., Inc., 60 W. 42nd St., New York 17, N. Y. Unlike the spot or floodlight, which gives a limited angle of serviceable light, the Airco Acetylene Flare is said to supply 360 degrees of light around itself.

The flare has a sturdy wind-shield, a standard acetylene gas valve, and comes with a 3/8-inch-diameter steel rod for mounting.

For further information write to the company, or use the Request Card at page 18. Circle No. 768.

Self-Powered Earth Drills

A line of horizontal and vertical self-powered auger-type earth drills is shown in a folder from the Cardox Corp., 307 N. Michigan Ave., Chicago 1, Ill. The Cardox-Hardsocg drills are trailer mounted.

Horizontal drills are made in a standard gasoline-powered model, an electric unit, and a self-propelled model. Vertical drills come in a standard and a heavy-duty model, with a choice of gasoline or electric power in either machine.

A tractor-mounted vertical model is also shown. Rotation power comes from the tractor's power shaft.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 813.

Two New Howe Managers

The Howe Scale Co., Rutland, Vt., has appointed Gale P. Foster Manager of the Cleveland, Ohio, branch. Recently released from active duty with the U. S. Air Force in Alaska, he is making his headquarters at 1251 W. 3rd. St., Cleveland 13.

Another Howe Co. appointment is that of Joseph G. Haegle, Jr., who becomes Manager of the Kansas City, Mo., branch with his office at 1312-14 St. Louis Ave., Kansas City 8, Mo. He was formerly Sales Representative at the St. Louis branch.

Educates in Job Safety

"People cause accidents." This plain statement of fact comes from Peter Kiewit Sons' Co., contractor, Omaha, Neb. It is possible to gage what a piece of equipment will do, according to its specifications, but when it comes to human beings it's another story altogether. The only solution, says W. F. Koeppen, of Kiewit, is to educate personnel to prevent accidents.

Various things have to be taken into consideration, such as physical handicaps, lack of emotional control, and mental limitations. If the

supervisor knows each worker's peculiarities, he should be able to assign a job to him which he is well able to perform. The supervisor's responsibilities should include not only the placing of the right person in the right job, but the development of good work habits, the discouragement of carelessness and dangerous short cuts, the encouragement of attention to the job in hand, and reminders about the employee's own safety and that of others.

Greater production with fewer accidents, concludes Mr. Koeppen, depends on such considerations.

Battery Additive

A battery additive for lead-acid storage batteries is made by Pioneers, Inc., 2411 Grove St., Oakland, Calif. According to the manufacturer the additive called Battery AD-X2 will reduce sulfation and encourage the redistribution of shed materials. It is also said to decrease loss of water, increase speed of charging, and normally increase the capacity of mechanically sound sulfated batteries.

For further information write to the company, or use the Request Card at page 18. Circle No. 777.

"Outlasts (Other Rope) Almost 2 Tuffy Scraper Rope



Jobs like this one on the Pennsylvania Turnpike call for a scraper rope with flexibility, stiffness and super strength. Tuffy Scraper Rope fills the bill on all 3 counts.

Save Up to 50% on Rope Costs When Tuffy Takes Over

From his records of yardage and service life, this Nebraska construction company owner discovered that Tuffy Scraper Rope was giving him almost twice the service of a second rope he was using!

This meant that he could save nearly 50% on scraper rope costs by switching to Tuffy Scraper Rope!

Time after time, reports like this one show that Tuffy is paying off for thousands of other users in the construction field. And there's a good reason why: Tuffy Scraper is *specially made* to stand up under the strains and stresses imposed by wheeled scrapers . . . it's *not* just a standard rope. Tuffy is tailored to take greater drum crushing abuse, angle pulls through swivel mounted sheaves, crawling on flanges of guide rolls and edges of sheave housing. Tuffy Scraper is *flexible* to withstand sharp bends over small drums and hug sheave grooves. Yet Tuffy has the *stiffness* needed to resist looping and kinking when slack! See for yourself how Tuffy pays off in longer runs and lower cost. When you order just ask for:

Tuffy Scraper Rope

REELS. FEET

How Many Length
inch in diameter.

*Name Furnished on Request.



union

Wire Rope

corporation

Specialists in Wire Rope
and Braided Wire Fabric

New Compaction Roller

A new 100-ton compaction roller is announced by Southwest Welding & Mfg. Co., 3201 W. Mission Road, Alhambra, Calif. The unit has four weight boxes and rolls on 44-ply 21.00 x 25 tires with a rated load per tire of 53,000 pounds. Each box can independently rise and fall 12 inches to follow uneven ground. The steel tubing yoke is constructed in sections to permit the use of three to six weight boxes. Inside beams are full-circle welded to the yoke. This is said to prevent torsional weaving and to simplify re-arrangement of



The new 100-ton compaction roller made by Southwest Welding & Mfg. Co. has four weight boxes that rise and fall independently.

the weight boxes.

It is claimed that a maximum compaction of 6 to 12-inch lifts is

reached on gravels, medium clays and silts, with only four to six passes. This oscillating roller is also made

in 15, 25, and 50-ton sizes.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 805.

India's Bokaro Power Plant Is Inaugurated

The first unit in Prime Minister Nehru's 5-year plan for the betterment of India has been completed on schedule. On February 21, Mr. Nehru inaugurated the huge new Bokaro Steam Power Plant (see C. & E., Nov., 1952, pg. 43). This first portion of India's \$140,000,000 multipurpose power system, modeled after our own TVA, was designed and constructed by The Kuljian Corp., Philadelphia, Pa., at a cost of \$35,000,000. At the Prime Minister's insistence, Harry A. Kuljian, President of the company, flew to India to be present at the inauguration ceremony.

The Bokaro Power Plant is linked to a series of dams in a gigantic irrigation, power, and flood-control project covering the 330-mile-long Damodar Valley in eastern India. The program, when completed, will end disastrous floods in the thickly populated valley, supply water from eight major storage dams for the irrigation of more than 1,000,000 acres, and furnish nearly 500,000 kw of hydro and steam electric power for eastern India's industries.

The Bokaro project involves three parts: the steam-power station itself; the Konar dam 12 miles from the plant, which will furnish cooling water; and a total of 477 miles of transmission lines and substations. An aerial conveyor will supply 700,000 tons of coal a year from the nearby Bermo strip coalfields. Of the four generating units comprising the main plant, only the first is now in operation; the rest will follow at 3-month intervals.

Eleven Indian engineers, trained in this country by Kuljian and General Electric Co. (which built three turbine generator units and eleven power transformers for the plant) will take over full-time operation within one year from the opening of the plant. This will follow the first year's operation under the supervision of Kuljian engineers.

Torque-Converter Drives

A bulletin on truck-type 3-stage hydraulic torque-converter drives is available from the Twin Disc Clutch Co., Hydraulic Division, Rockford, Ill. It describes application to on-highway and off-highway units, and explains the advantages of highest torque multiplication for pulling and torque-converter braking.

Two models are offered. Both provide the converter-braking feature, which forces the truck's driving wheels to drive the turbine assembly on down grades. The Model DF converter is used over variable terrain where converter drive and braking can be utilized on steep grades and direct drive can be used on long straight runs. Model CF is made for short hauling operations, involving constant climbing and descending, loaded and empty.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 707.

no 2 to 1,"

Owner of Middlewestern Construction Company*, Making of Tuffy Super Rope.



3 More Custom Created Tuffy's For Special Uses

Tuffy DRAGLINE

Gives extra flexibility, without sacrificing quality... spools better and rides better on grooves, hugs drum when casting. Provides maximum abrasive resistance through finer construction technique and toughened materials.



Tuffy DOZER ROPE

A specially constructed 1/2" rope for tough dozer service. Mount a 150' reel just back of the wedge socket. Feed only enough through to replace the damaged part on the drum. Cut wastage of undamaged rope—cut down time one-half. Users report savings up to 300%.



Tuffy SLINGS

Patented 9 part machine - braided wire fabric construction resists knots and kinks. Stands up longer than ordinary wire rope under heavy use. Proof-tested to twice safe working load.



and construction puts extra strains and stresses on ropes that ordinary wire ropes can't take. Tuffy Super Rope is specially made for use on wheel scrapers.

GET THESE FREE FOLDERS



Off and Mail Coupon Today!

union Wire Rope corporation
Specialists In Wire Rope and Braided Wire Fabric
2260 Manchester Ave., Kansas City 3, Mo.

Please send the folders I have checked below.

- ☐ Tuffy Dragline ☐ Tuffy Scraper Rope
☐ Tuffy Dozer Rope ☐ Tuffy Slings

Firm Name _____

By _____ Title _____

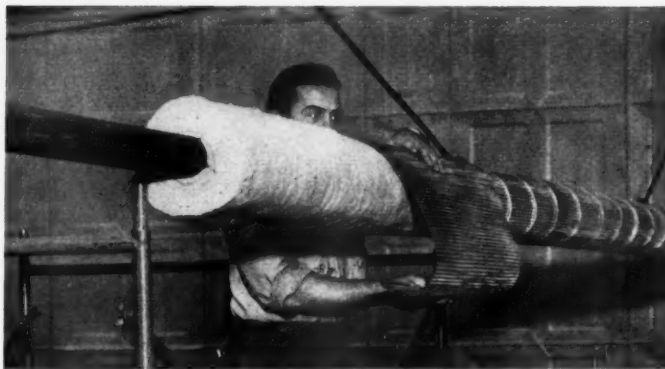
Address _____ City _____ State _____

Circular Brush Saw

A new motor-powered circular brush saw is announced by Williams & Hussey Machine Corp., Milford, N. H. The Wilton, which is powered by a 2-cycle 1.2-hp motor, comes with an 8 or 10-inch blade. It operates on a gasoline and oil mixture. The circular blade cuts vines, brush, saplings, and any stems up to 4 inches. On light brush it may be swung like a scythe. The unit weighs less than 30 pounds and is shoulder-slung on a broad web strap to distribute its weight.

The saw blade is fixed at a 10-degree angle to permit horizontal close-to-the-ground cutting. It also swings upward for vertical cutting while the motor remains in a level position.

For further information write to the company, or use the Request Card at page 18. Circle No. 788.



Aerowrap insulates both hot and cold pipes.

Pipe Insulation Wraps

A new Fiberglas wrap-around pipe insulation for hot and cold pipes of all sizes is made by Owens-Corning Fiberglas Corp., Nicholas Bldg., Toledo, Ohio. Known as Aero-

wrap, it is said to be soft and resilient and to have a high thermal efficiency.

It is available in 100-foot rolls, 36 inches wide and 3/4 inch thick. According to the manufacturer, the insulation may be cut with shears,

knife, or paper cutter. It may be used on pipes with temperatures ranging from sub-zero to 600 degrees F and may be applied in various degrees of thickness by repeated wrapping.

For further information write to the company, or use the Request Card at page 18. Circle No. 801.

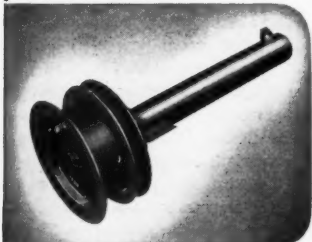
Tractor-Mounted Spreader

A spreader that attaches to the front end of a tractor is described in a folder from Tractor Spreader Co., Hasbrouck Heights, N. J.

The Jersey spreader lays 20 tons per minute of non-bulking materials such as broken stone and crushed gravel. The maximum depth of spread of the unit is 12 inches and the maximum width 10 to 13 feet.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 738.

2 ways to make crane operations pay more



Rud-O-Matic Magnet Reel Tagline Combination

- Steel tagline holds magnet steady and absorbs the load . . . protective slack is maintained in expensive magnet cable to avoid jerking, pulling loose at the terminals or snagging.
- Standard with major crane manufacturers, made in five sizes for your present equipment.



Rud-O-Matic Tagline

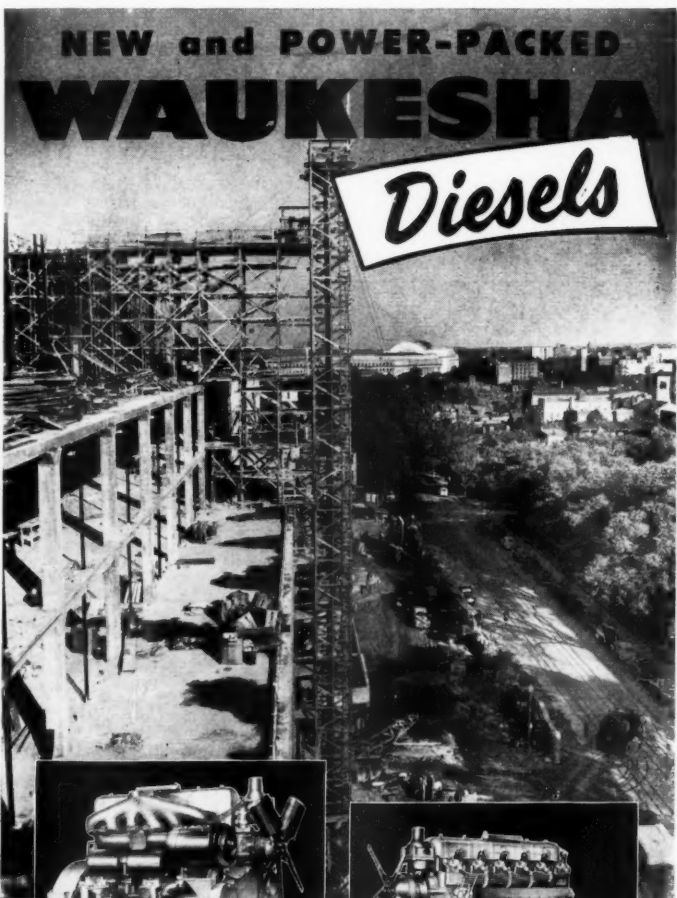
- steadies your clamshell buckets. Provides ample coil spring power at all boom angles to keep bucket lined up with the work. Makes more loads per day easier. Rud-O-Matics are fool-proof, trouble-free. Eight sizes meet all requirements. Available immediately. For full information see your dealer — or mail coupon below.

I'd like more information on ☐ Rud-O-Matic Taglines, ☐ Rud-O-Matic Magnet Reel-Tagline Combinations. Send literature and complete details.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

McCAFFREY-RUDDOCK
Tagline
CORPORATION

2131 East 25th Street • Los Angeles 58, California



The 195-DLC Medium Speed Diesel

manifold side, showing intake and up-exhaust manifold; waste-packed lubricating oil filters; 12-volt pivot-mounted belt-driven generator; fuel supply pump; water pump by-pass, and foot-type fly-wheel housing.

GET BULLETIN 1624

A high-output high-speed Diesel, with counterbalanced crankshaft, 195-DLCA has a 98 hp max. @ 2800 rpm. The medium speed, with standard crankshaft, 195-DLC has a 96 hp max. @ 2400 rpm for momentary overload, 86 hp @ 2400 intermittent and 67 hp @ 2000 for continuous duty. Both models have aluminum pistons, six cylinders, 4-in. x 4-in., 302 cu. in. displ.

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.
New York • Tulsa • Los Angeles

195-DLCA High Speed Diesel

injection side, with pump mounted governor and fuel supply pump, fuel filter, water pump, single orifice pintle-type nozzles, drawn steel injection tubing of uniform length, 12-volt starting motor, vibration damper, arm-type flywheel housing.

Ask the man behind the "gun"

Coated optics give you this — not this —

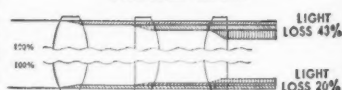


Model 3000, \$185.00*, complete with tripod.

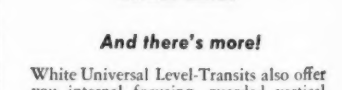
with a White Universal Level-Transit

HERE'S what coated optics do for you. You can put in a full day without eyestrain or headache. There's less chance for a mis-reading. You get a clear, sharp sight — not a fuzzy image. What's more, you get your reading in far less time. Check this diagram. See for yourself how coated optics pass through up to 40% more light, provide a clearer image contrast.

PASSAGE OF LIGHT THROUGH UNCOATED LENSES



PASSAGE OF LIGHT THROUGH COATED LENSES



And there's more!

White Universal Level-Transits also offer you internal focusing, guarded vertical arc and ball bearing race which insures smooth operation, even in sub-zero temperatures. Check one out on your next trip. You'll soon be convinced a White can make your work faster, easier, more accurate . . . Write for Bulletin 1053. DAVID WHITE CO. 313 W. Court Street, Milwaukee 12, Wisconsin.



Expert REPAIR SERVICE on all makes, all types of instruments

*Prices subject to change without notice.
CONTRACTORS AND ENGINEERS

Bridge Piers Built To Bedrock in River

Austin, Texas, Constructs River Bridge by Contract To Ease Traffic Problem on Streets of Capital

• DESPITE the shortage of steel and the problem of building concrete piers to bedrock in the bottom of Texas' Colorado River, the City of Austin went ahead last year with the construction of a new \$513,972 structure. The new bridge, a vehicle and pedestrian structure, connects Guadalupe and Lavaca Streets with South 1st Street and eases the traffic problem on the streets of the capital city. Austin Bridge Co. of Dallas had the contract.

Work started on May 15, 1952, and in typical Austin Bridge Co. fashion, the piers progressed rapidly, in spite of the fact that they had to be set on bedrock below the river bottom, and in some cases, many feet below the water surface. Piers were completed at the rate of one in three weeks. And that rate of progress included driving the cofferdam, mucking out, bracing, building the pier, and pulling the piles for re-use on the next pier.

Bridge Design

The new bridge was designed for H20-S16-44 loading, and is a plate-deck-girder type of structure. Its total length is 811 feet 11½ inches, divided up into spans measuring 105, 105, 120, 150, 150, 120, and 56 feet. The abutments are concrete, and the piers are octagonal-shaped reinforced-concrete shafts capped with a reinforced-concrete beam. The bridge is 50 feet wide over-all, and includes a 5-foot sidewalk on each side. The concrete deck, which rests on four longitudinal steel girders 6 feet 4 inches deep, is 9¼ inches thick.

Top elevation of the structure is 457.97, while the normal water surface of the Colorado River is 419.9. The Colorado is not a navigable stream at Austin, and farther up is controlled by a system of storage reservoirs and hydroelectric works, built under the Colorado River Authority within the framework of the Texas state government.

Major quantities in the new structure included 7,500 cubic yards of channel excavation; 2,535 cubic yards of unclassified structural excavation; 1,175 cubic yards of excavation in abutments; 2,771 cubic yards of Class A concrete in abutments, piers, and retaining walls; and 858 cubic yards of Class A concrete in the superstructures. Reinforcing steel totaled 396,291 pounds, and structural steel, 1,681,342 pounds.

Pier Work Moves Fast

Construction of the several piers moved rapidly on a well organized schedule, and what could have been a troublesome job went along without any outward difficulty.

Each pier is bedded 4 feet deep in the flat-ledge limestone lying across the stream bottom. The foundation concrete consists of a chunk of re-

inforced concrete 49 feet long, 10 feet wide, and 4 feet thick. To gouge the hole for this concrete chunk required good planning, good equipment, and sound methods.

Before a pier was built, the area around its outline was cofferdamed by driving Carnegie steel sheet piles around the enclosure to give about 2½ feet of working room all around

(Continued on next page)

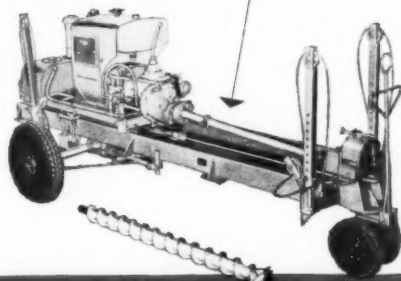


From the top of one of the completed concrete pier caps, we look toward Austin on the other side of the river. A P&H 655-A crane sets steel sheet piling for a cofferdam.

Which Meets Your Needs Best?

CARDOX - HARDSOCC

speed up and cut costs on many kinds of drilling



Self-Propelled HORIZONTAL HYDRAULIC

You'll drill more holes per day with this highly mobile unit, because you spend *more* time drilling, *less* time moving from hole to hole. Saves money, too—you don't have to tie up a truck to move it. Has 32-H.P. air-cooled gasoline engine with power take-off and hydraulic pump. Augers are driven into the bank by a hydraulic piston. Standard auger equipment includes seven 6' sections (42' total) for drilling holes up to 6" diameter. Wheels and axles can be easily removed to permit low level drilling.

LET YOUR CARDOX DISTRIBUTOR OR REPRESENTATIVE HELP YOU WHENEVER YOU NEED ANY KIND OF DRILLING EQUIPMENT

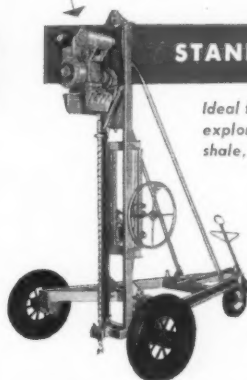


Tractor Mobility in an Economical One-Man Operated Unit

TRACTOR MOUNTED VERTICAL

Multi-Use Unit Saves You Time on the Job —and Between Jobs

Especially designed for jobs that require maximum mobility and fast drilling of many holes. The carefully engineered, rugged drill unit is driven by the standard farm type tractor. The auger is raised, lowered and fed into the work by a built-in hydraulic cylinder. Handles augers up to 6 inches or more in diameter. Augers are in 6-foot sections, available with any standard connection, for extension to any desired length. Augers can be added in just a few seconds



STANDARD VERTICAL

Ideal for drilling blast holes or doing exploratory work in clay, gypsum, asbestos, shale, and other materials.

Simple, rugged and very easy to use. The weight of the engine forces the auger and cutter head into the material being drilled. Large hand wheel raises and lowers the power assembly easily. Mast can be lowered when moving unit. Available with 6½ H.P. or 12 H.P. air-cooled gasoline engine. Standard auger equipment includes 6-foot section for 2½" or 3" holes. Other sizes also available.

CARDOX CORPORATION • SELL BUILDING • CHICAGO 9, ILLINOIS			
WAREHOUSES	Harper, West Virginia Phone: Buckley 4912	Cummins-on-Gauley, W. Va. Phone: 2181	Benton, Illinois Phone: Benton 435
	347 Northwest 5th Street Branfordville, Indiana	St. Clairsville, Ohio	Louisville, Colorado Phone: Louisville 234
			Route 2, Box 97 Piquette, Kentucky

Bridge Piers Built To Bedrock in River

(Continued from preceding page)

the concrete work. Since the piles had to be re-used at least 6 times, care was needed to prevent the tops and bottoms from brooming or bending excessively. A P&H Model 655 crane, equipped with a 65-foot boom, was used to set and drive this sheeting, and a No. 6 McKiernan-Terry pile hammer was chosen instead of a larger-sized hammer, which might have bent the piles. Only one section was set and driven at a time. The boiler which furnished steam was a small 60-hp upright type.

When the steel sheet piles were in, excavation of the muck inside began. This muck was generally composed of dirt and river sand down to the rock line, and could be clammed out easily by a 1½-yard Owens bucket on the 655-A.

The excavation of bedrock down to the 4-foot line was something of a problem, because the white material was shot through with fissures and slip planes which tended to absorb the force of a powder explosion without breaking the rock. A 365-cfm Gardner-Denver compressor was brought in, along with four jackhammers and ordinary rock bits, to sink the holes. Hole centers soon settled down to a 3-foot square pattern, and although the material drilled easily, experts from Hercules Powder Co. were called in to make suggestions about loading.

The proximity of the steel cofferdam and several sets of 15½-inch steel wales nearby prevented unusually heavy loading, and light loading seemed ineffective. The best plan was to make a 6-hole burn out of the center, and by using No. 2 and No. 6 delays toward the outside, to break the rock into the center portion. Some of the rock came out in big chunks nevertheless.

When the inside of the cofferdam was cleaned down to final grade in rock, the hole was dried up by a 6-inch Jaeger and two 4-inch Worthington pumps, which had sufficient capacity even for the building of the river piers. The inside steel brace rings for the cofferdam, designed to prevent its collapse under its exterior load, were spaced 3½, 9½, and 14½ feet from final grade. All the piers rest at about the same level, since the limestone ledge underneath lies practically flat.

The construction of the concrete portion of a pier was arranged in three steps: placing the base in rock, erecting the three 26-foot columns in one pour, and, as a final step, pouring the 8-foot cap. Construction of the footing slab was the simplest of the three, because truck-mixed concrete from Transit Mix, Inc., a commercial firm in Austin, arrived on the job and was transferred directly to the point of placement. Even in the case of the river piers, earth ramps could be built out to support the crane and mixer trucks.

The three octagonal-shaped columns were poured at one time, in wooden forms specially built and braced so they could be re-used. The facing for these forms was plywood, and heavy exterior studs and wales prevented movement after the forms were closed up and checked. These forms were securely tied in



Cement finishers put the rubbed surface on a concrete pier cap for the bridge over the Colorado River at Austin, Texas. Dams supporting the cap are partly shown in the lower portion of the picture.

a plumb position by cables anchored to deadmen nearby. Column forms were filled slowly, about 2 feet at a time, by three truck mixers shuttling back and forth between the bridge and the mixing plant. A pneumatic vibrator was used with the Gardner-Denver compressor to consolidate the fresh material.

The heavy 8-foot top cap was supported by a set of 10-inch steel I-beams, carried on special tie bolts poured into the concrete at the top of the columns. The beam forms rested on these steel members, and when the concrete had been in place 14 days, the forms could be stripped from underneath. Side forms were stripped sooner by loosening the Dayton form ties, and the cap concrete as well as all exposed masonry was dressed to fine architectural specifications by hand rubbing. Two men worked full time dressing the concrete as it was stripped. The 5-



In confined underground operation, fast-shuttling Dumpsters are ideal for no-turn hauling in tunnels and along narrow passageways. Also note how low rear entry to Dumpster body permits easy loading under low ceiling. Compact body is 8' x 8' for loading over and on sides.



This mountain-side job shows typical no-turn shuttle advantage. Hauling along narrow ledge, Dumpster spots close to Koechling 1½-yard 405 — gets its load, drives to fill, dumps, and returns to the shovel — without turning. Dumpsters are operated with equal ease in both directions.

sack mix used in all Class A work had no air-entraining or other admixtures in it, and tests showed about 3,000 pounds of compressive strength at 28 days.

The job was small but efficient, with a minimum outlay of equipment and not too many men. There was plenty of time to finish the piers without any danger of high water on the river, due to all the control works above. All the piers were finished by the time steel arrived at the site.

Austin Bridge Co. is well known in Texas for bridge-construction feats all over the state. At the same time as the Colorado River bridge, the company had under construction several structures, including the long Canadian River bridge at Canadian, Texas. The Galveston Causeway was an Austin Bridge Co. job. On the same day, about June 1, 1952, a barge got loose and knocked out one



Austin Bridge Co.'s Superintendent T. H. Deavers (left) discusses the job with M. C. Welborn.

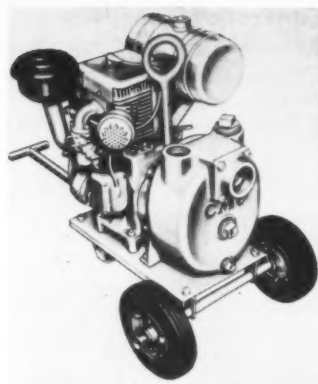
span of the Galveston bridge, while 800 miles away an overloaded truck was ruining an inshore span of the old bridge at Canadian, which was being replaced by the new structure the company was building.

Personnel

The bridge at Austin was designed by Julian Montgomery, Consulting Engineer, and its construction was supervised by the City's Department of Public Works, which is under the direction of C. G. Levander. Field engineering was under the supervision of Assistant Director of Public Works Noble Latson, and the Resident Engineer was a well known retired former District Engineer of the Texas Highway Department, M. C. Welborn.

T. H. Deavers, General Superintendent, headed up the Austin Bridge Co. field personnel, under the general supervision of President Charles R. Moore and Vice President John B. Templeton.

Any spare clothes in your closet? The spring collection by the American Relief for Korea gets under way in April—see what you can give.



Self-Priming Pump

A new portable self-priming centrifugal pump is announced by the Construction Machinery Co., Waterloo, Iowa. The pump is available in four sizes and seven models with sizes ranging from 1½ feet through 4 feet. All models are powered by air-cooled engines.

The Dual-Prime pump has dual volutes and its case is of the one-piece self-cleaning type. At the point where the rotating impeller shaft enters the pump case, a rotary-shaft seal is used in place of a conventional stuffing box. A hydraulic seal at the rim of the impeller provides protection against abrasive particles.

The manufacturer states that, compared with previous models, the parts used in the pump have been reduced by about 50 per cent and the weight by an average of 25 per cent.

For further information write to the company, or use the Request Card at page 18. Circle No. 776.

On-the-Job Movie by Dravo

A sound-color film recently produced by Dravo Corp., Pittsburgh, Pa., is the story of how the construction company integrates its many activities. Emphasis is put on engineering, the connecting link between Dravo's four main divisions and five subsidiaries.

Entitled "Portrait of an Enterprise," this 16-mm movie runs for 30 minutes. On the job scenes of heavy-construction projects such as river locks, dams and bridges are shown. Riverboat and barge construction are included, together with some sequences showing launchings and the operation of large ore-unloaders. Still others highlight the production and distribution of river sand and gravel, the construction of a central-station power plant, and a compressor station for a gas-transmission line.

The film may be obtained without charge by writing to the Advertising Dept., Dravo Corp., Neville Island, Pittsburgh 25, Pa.

Winters Represents Warco

Andrew Winters is Factory Representative in the southwest for W. A. Riddell Corp., Bucyrus, Ohio. Making his headquarters at Dallas, Texas, he will cover Texas, Oklahoma, Arkansas, Louisiana, Kansas, Colorado, and New Mexico. Mr. Winters, who has experience in heavy construction, will work closely with distributors and customers of the Warco 4D-85, 85-hp and the 4D-100, 100-hp motor grader.



increases hourly output over 10%

With Koehring fast-shuttling Dumptors, there is no need to turn at the loading unit, along narrow haul roads, or at the dump. Koehring constant-mesh transmission gives the same 3 fast speeds forward and reverse. Every turn saved cuts 15 seconds off your cycle time, and adds up to a big increase in yards hauled per hour.

On a 1,000-foot haul, eliminating only 2 turns saves ½ minute every round trip. Where you

would get an average of 13.6 trips per hour with 2-turn operation, Dumptor no-turn shuttle hauling gives you 15.4 trips. That's an increase of 1.8 trips an hour on the same, 1,000-foot haul.

Fast, easy spotting and 1-second gravity dump also help keep production high. Your Koehring distributor can show you many other cost-cutting advantages with heavy-duty, 6-yard Dumptors.

KOEHRING COMPANY, Milwaukee 16, Wis.

KOEHRING



DUMPTOR®

Subsidiary Companies:

JOHNSON • PARSONS • KWIK-MIX

Concrete Mixer Has Rear-Mounted Engine

A new 6 to 7½-cubic-yard concrete mixer has been announced by Willard Concrete Machinery Sales Co., 11700 Wright Road, Lynwood, Calif. The engine that powers the drum has been mounted in the rear and the weight of the concrete is thrown forward to equalize axle loads. This is said to allow greater payloads while still maintaining legal distribution of the weight on the truck's axles.

The mixer is suitable for mounting on a 10-wheel truck with 175-inch wheelbase. A transverse-mounted, 93-hp Ford OHV Industrial 6 powers the drum through a Ford transmission. Over-all gear ratio is 281 to 1.

The drum is stiffened by two overlapping mixing spirals. The folding chute is made of ½-inch steel and extends 8 feet 6 inches from the



The engine of Willard's new concrete mixer is mounted in the rear to throw the weight of the concrete forward.

swivel center. A 4-foot extension is mounted on the fender. 90 gallons of water are carried in a front-mounted combined pedestal and tank with outlets for mixing and washing. A ¾-inch gear-type water pump is driven by V-belt from the mixer engine.

For further information write to the company, or use the Request Card at page 18. Circle No. 806.

Truck Association Appoints

H. A. Mike Flanakin, Acting Director of the Engineering Experiment Station at Louisiana State University, has been appointed Highway Engineer for the American Trucking Associations, Inc., Washington, D. C.

Mr. Flanakin's career in highway engineering dates back to 1927. In 1936 he and three engineers set up the Traffic and Planning Division of the Louisiana Highway Department—a division that he later directed. By 1941, Mr. Flanakin was State Planning Engineer for Louisiana. Following his service in that post, and again in 1946-47 after his release from the Army, he was Area Director for the National Housing Agency in Dallas, Texas.

Mr. Flanakin was an Associate Professor of Engineering at LSU from 1947 to 1951, when he became Acting Director of the Engineering Experiment Station. In this position he has been in charge of all engineering extension services, short courses, and conferences dealing with highway engineering at the University. He has coordinated all research activities of the engineering faculty, and has himself worked as a consultant to several municipalities on traffic and city-planning problems.

Tractor-Mounted Trencher

A booklet on a tractor-mounted trencher is offered by Parsons Co., Newton, Iowa, a subsidiary of Koehring Co., Milwaukee, Wis. The 250 Trenchliner has a maximum digging capacity that is 12½ feet deep and 16 to 42 inches wide. It has a range of 30 digging feeds, 3 bucket-line and conveyor-belt speeds, and 4 travel speeds.

Features stressed in the booklet include: a reversible truck-height spoil conveyor that power shifts through the machine in less than one minute; a shiftable and telescopic boom for offset digging at variable depths; a welded arch-type frame; automatic bucket cleaner and tap-in self sharpening tooth points. An automatic safety clutch protects the machinery from shock loads.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 760.

BRAMBLICIDE... BRAMBLE-WEEDICIDE



FIRST IN BRUSH KILLERS

Thompson is a basic manufacturer of superior, low volatile esters of 2,4,5-T and 2,4-D unmatched for efficiency and economy by any known product. Let us bid on your requirements.

Write Dep't. 1 for Right of Way Booklet

THOMPSON CHEMICALS CORPORATION
St. Louis 3, Mo. Los Angeles 27, Calif.

CONTRACTORS AND ENGINEERS



Do YOU Want To CUT WIRE ROPE COSTS?

• How long is it since you made a real check of the results you get from the wire rope used on your equipment? If you aren't sure that every rope is giving full value in service life, send for a free copy of this brand new wire rope recommendation book. It covers the equipment used by general contractors and gives you a good yardstick to go by.

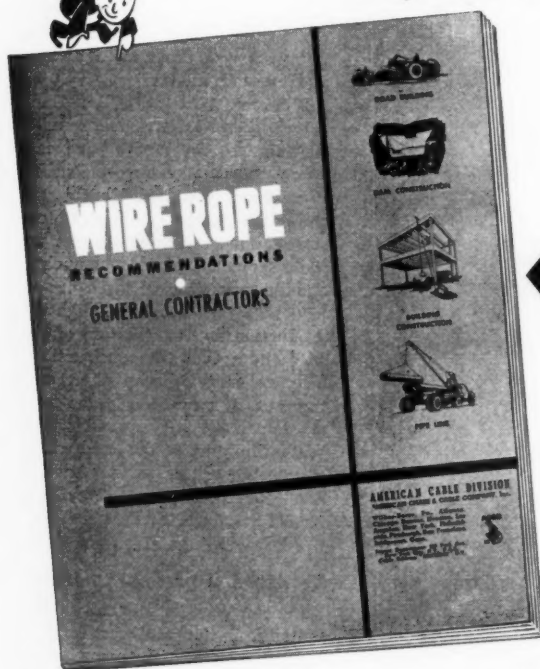
This American Cable book is simple to understand, and it's right to the point. It has alphabetical listings by machines and uses. It gives a clear and complete recommendation of the best rope for longest life and lowest cost on each machine or use. It is illustrated with big action pictures of many different machines so you can easily identify most uses.

Oh, Yes... DUALOC® Boom Cables

• Here's something very important to all operators of cranes, drag lines, and shovels. This book tells you about the greatest improvement ever made in boom cables—DUALOC. It shows how they work, and why they last longer.

You Need This Book

This new "Wire Rope Recommendations for General Contractors" will save you money, and that's sure important in the contracting business today. Write to our Wilkes-Barre, Pa., office for your free copy at once, or pick up one from your nearby AMERICAN CABLE distributor.



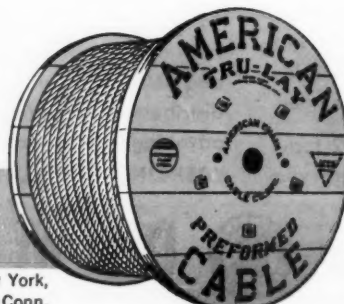
ACCO

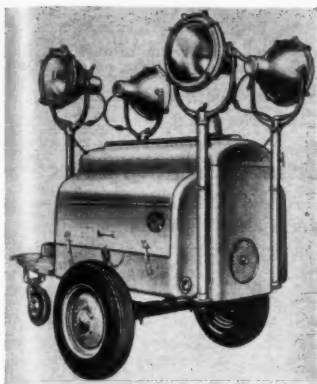


*Trade Mark Registered
Patent No. 2463199

AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.





Floodlight Power Unit

A trailer-mounted floodlight and power unit is made by Winpower Mfg. Co., Newton, Iowa. It has four 1,000-watt 80,000-candlepower floodlights. The standards telescope to a height of 8½ feet and the lights swing 180 degrees vertically and 360 degrees horizontally. There is a separate fused switch for each light.

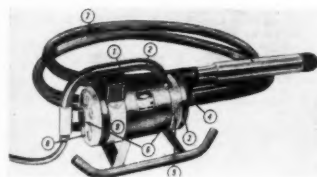
The Nite-Hawk model NH5-W is powered by a Wisconsin VF-4 engine and has a 115-volt or 115 to 230-volt ac generator. For small tools and extension lights there are two plug-in duplex receptacles and outlets on the control panel. Also on the panel are a voltmeter, ammeter and rheostat to control voltage and an automatic circuit breaker.

The pneumatic-tired trailer has a front caster wheel that retracts in travel.

For further information write to the company, or use the Request Card at page 18. Circle No. 786.

New Electric Vibrator

A new electric concrete vibrator has been added to the Wyco line made by Wyzenbeek & Staff, Inc., 223 N. California Ave., Chicago 12, Ill. The 2-hp unit works on 110 volts ac and dc. It weighs 46 pounds.



The vibrator will operate the company's 750-A and 750-B vibrator heads. Vibrator shafts are interchangeable with those of gasoline models.

Other features include replaceable air filters, built-in switch, balanced handle, welded-steel housing, and large fan.

For further information write to the company, or use the Request Card at page 18. Circle No. 717.



Jobs Done Quicker, Cheaper

Attached to Tractors, Bulldozers, Motor Graders and Scrapers, the Automatic Slope-Meters are in use on the construction of highways, airports, dams and building sites. Slope-Meters are compact, sturdily constructed instruments that will automatically show the operator the exact grade or slope on which he is working.

Order from Your Equipment Distributor Today
OR
THE SLOPE-METER CO. EXCELSIOR, MINN.

APRIL, 1953

Allis-Chalmers Appoints

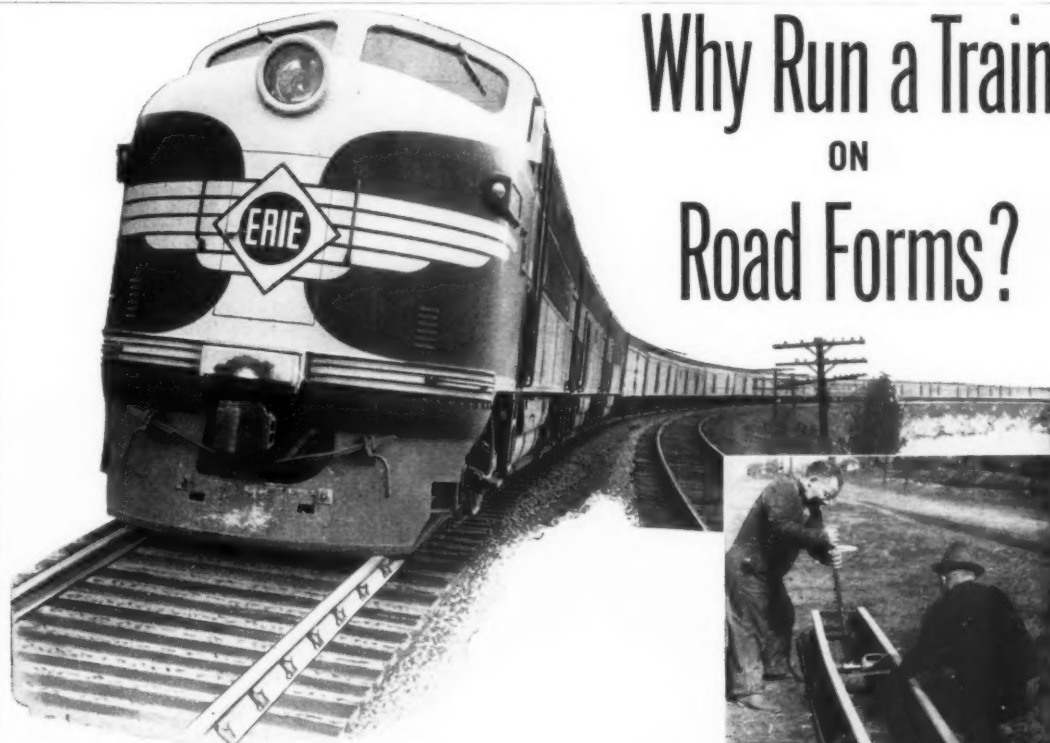
Myron W. Rhoten succeeds George A. Gillespie as Territory Sales Manager for the European area, Tractor Division, Allis-Chalmers Mfg. Co., Milwaukee, Wis. He will make his headquarters in Paris, France.

Mr. Rhoten joined Allis-Chalmers at Sioux City, Iowa, in 1938, and has served the company in various capacities. Prior to his present appointment he was Export Service Manager at the home office in Milwaukee. Clyde Crozier, a member of Mr. Rhoten's staff since 1941, succeeds him in that position.

The recently created post of Export Sales Manager, Tractor Division, is being filled by Walter A. Hebel, who has been special Representative for the Tractor Division since 1950. Mr. Hebel has served Allis-Chalmers since 1933.



The old method of fastening Ultralite, a glass fiber insulation duct liner, to sheet metal with adhesive "gook" has been supplanted by the use of a new Bostitch wire stapling machine. The round washers that hold the Ultralite in place are tin-smith's roofing buttons. For further information on Ultralite write to Guston-Bacon Mfg. Co., Kansas City 6, Mo., or use the Request Card at page 18. Circle No. 867.



Why Run a Train ON Road Forms?

Super-Strength HELTZEL ROAD FORMS

LAST LONGER—REDUCE MAINTENANCE

Heltzel believed they built the strongest, most serviceable road form in the world. They decided to submit their form to a series of grueling tests to find out just how much abuse it could take.

First of all, they bolted a Heltzel form to a similar form of another make. Inserting a jack at the center point they applied pressure to compare bending moments. The Heltzel form remained rigid while the other form weakened and bent to the pressure.

Secondly, they put the two forms to an impact test. Two men wielded sledges and alternately attempted to smash the forms apart. Here again the Heltzel form withstood the punishment as the second form was damaged beyond repair.

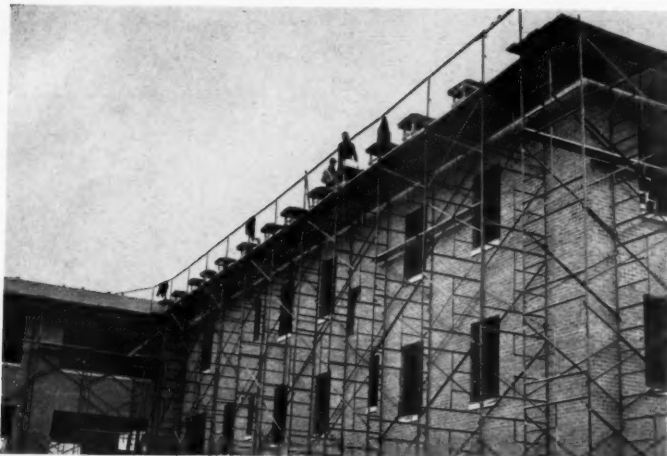
Finally, they set up two lines of Heltzel forms and backed a loaded freight train over them without a sign of failure.

What does all this prove? Simply that when you buy Heltzel forms you're getting the best that money can buy at no increase in price. A road form must be able to withstand punishment year in and year out, with replacement held to a minimum. That's why Heltzel engineers have gone to such great lengths to design and build and to prove the Heltzel form is the finest ever made.

Let Heltzel prove it to you. It will pay handsome dividends. For additional information, or the name of the Heltzel representative nearest you, write THE HELTZEL STEEL FORM AND IRON CO., WARREN, OHIO.

Write for Bulletin K-19 NOW!





Workmen apply finishing touches to the brick and tile-faced Waverly County Home project, Waverly, Iowa. Waco steel scaffolding, featuring the Speedlock method of assembly, was erected around the structure tier by tier as the work progressed. The scaffolding was supplied by Waco Scaffolding, Inc., Minneapolis, Minn., distributor for the manufacturer, Wilson-Albrecht Co., Inc., Minneapolis.

Preventive Maintenance

A maintenance program for Euclid earth-moving equipment is described in a 20-page booklet published by the company's service department. The heart of the program is a control system which notifies the shop when regular servicing intervals are due, checks on whether or not the work has been done, and provides a record of repair costs, fuel and oil consumption, and equipment availability.

The publication explains the operation of the program, and provides a detailed outline of all points that should be checked at 100 to 4,000 hours of operation. The various forms used in the Euclid maintenance program are also shown.

The booklet, entitled "Euclid's Guide to Preventive Maintenance," states that paper work for the program can be taken care of in a few

minutes a day.

To obtain this literature write to the Euclid Road Machinery Co., 1361 Chardon Rd., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 804.

Safety Grating Selector

A device that helps select a safety grating for a specific steel-flooring load-span condition is available from the A. O. Smith Corp., 3533 N. 27th St., Milwaukee, Wis. The selector will also indicate the deflection of the grating selected under a given load-span condition. In addition, it shows a complete table of panel widths in stock sizes as well as a complete range of weights of all A. O. Smith safety grating. The device works like a slide-rule.

For further information write to the company, or use the Request Card at page 18. Circle No. 814.



Duo-Way Scoop with hydraulically powered boom, steering and dozer control is available in two sizes—DS3H shown above has 1½ cu. capacity, Model DS2H has 1 cu. capacity. Discharge height of both models is 9'-6" with standard boom.

...The versatile machines with two "PROFIT ENDS"

For ability to do a multitude of construction jobs quickly and well, no other machine can match the Duo-Way Scoop. With standard equipment one end stockpiles, scoops, digs and loads. Quick change attachments make it into a mobile concrete pourer, a powerful fork lift truck or a fast, portable crane.


The other "business end" of the Duo-Way bulldozes, levels, removes snow, backfills. In between jobs, the Duo-Way can be used as a tractor to pull compactors and other heavy equipment.

Here is a compact, versatile tool that is job-engineered to serve the many uses of contractors, materials handlers, industrial and manufacturing plants everywhere.

To learn how the Duo-Way will boost the profit margin on your particular jobs, see your nearest Mixermobile dealer or write us for descriptive literature.

Easy to Operate... A Glutton for Hard Work

- ★ Hydraulic power steering.
- ★ Heavy duty reversing transmission, 4 speeds forward and reverse.
- ★ 3-wheel maneuverability.
- ★ Operator sits sideways for full view of work both front and back.
- ★ Powered with heavy duty industrial engines.
- ★ Planetary drive with 3-to-1 gear reduction.
- ★ Drive or tow from job to job.



MIXERMOBILE DISTRIBUTORS, INC.

8027 N. E. KILLINGSWORTH STREET • P. O. BOX 7527 • PORTLAND 20, OREGON

Scoopmobile • Duo-way Scoop • Dozermobile • Duo-way Lift • Mixermobile
4-Wheel Drive Scoopmobile • 4-Wheel Drive Tractor
Towermobile • Stationary Mixer

MIXERMOBILE DISTRIBUTORS

- ALA.—Construction Equipment Co., 2921-2 Avenue, S., Birmingham.
- ARIZ.—Equipment Sales Co., 720 So., 19th St., Phoenix.
- ARK.—Choctaw, Inc., P. O. Box 1300 1300 Bond St., Little Rock.
- CALIF.—Bronson Equipment Co., 1310 N. Rosemead Blvd., El Monte; Mixermobile Co., Inc., 245½ South Western Ave., Los Angeles 41; Mixermobile Sales & Service, 33 - 23rd Avenue, Oakland 4; Growers Tractor & Imp., Inc., 1300 "U" Street, Sacramento 7; Tulare City Tractor Co., Visalia.
- COLO.—Constructors Equipment Co., 3707 Downing St., Denver.
- CONN.—Hedge & Mattheis Co., 391 Prospect Street, East Hartford; Hedge & Mattheis Co., 70 Orange Street, West Haven.
- FLA.—Hoff-Thomas Mch. Co., 1920 N. W. Miami Court, G.A.—Tractor & Mach. Co., 470 Glenn St., S.W. Atlanta.
- IDAHO.—Western Equipment Co., 4009 Fairview, P.O. Box 877, Boise, Idaho; Western Equipment Co., P.O. Box 96, Idaho Falls.
- ILL.—Arrow Contractors Equip., 2020 West Walnut St., Chicago 12.
- IOWA.—Heiner-Harker Co., 1810-16th Ave., S. W., Cedar Rapids; Anderson Equipment Co., 306 S. Virginia St., Sioux City.
- KANS.—Victor L. Phillips Co., 3611 N. Broadway, Wichita.
- LA.—Southern States Equip. Co., 425 Celeste Street, New Orleans 11.
- MAINE.—Hedge & Mattheis Co., P.O. Box 120, Bangor; Hedge & Mattheis Co., 105 Preble St., Portland; Hedge & Mattheis Co., Outer State Street, Vezzie.
- MASS.—Hedge & Mattheis Co., 754 Southbridge St., Auburn; Hedge & Mattheis Co., 285 Dorchester Ave., Boston 27; Hedge & Mattheis Co., 85 Spring Street, West Springfield.
- MICH.—Contractors Machinery Co., 333 Midland Avenue, Detroit 3; Contractors Machinery Co., 530 Monroe Ave., Grand Rapids 2.
- MINN.—Minneapolis Equipment Co., 520 Second St., S. E., Minneapolis.
- MISS.—Choctaw, Inc., Hwy. 80 W. & Gallatin, Jackson.
- MO.—Victor L. Phillips Co., 1600 Baltimore St., Kansas City 8; O. B. Avery Co., 1325 Macklind Ave., St. Louis 10.
- MONT.—Westmont Trac. Equipment Co., 150 East Spruce Street, Missoula.
- NEBR.—Anderson Equipment Co., Inc., 616 Merchants Nat'l Bank Bldg., Omaha.
- NEV.—H. Waldman Motor Equipment Co., 1715 E. Fremont St., Las Vegas; Mack Truck Sales, P. O. Box 1813, Reno.
- N. H.—Hedge & Mattheis, 80 S. Main St., Concord.
- N. J.—E. H. Klienbenstein Co., 1099 Hendricks Causeway, Ridgefield.
- N. MEX.—Lively Equipment Co., 2601 N. 4th., P.O. 784, Albuquerque.
- N. Y.—Slide Tractor Co., 924 Broadway St., Albany 4; Rupp Equipment Co., 181 Great Arrow Avenue, Buffalo 16; Hedge & Hammond, Inc., 720 Garrison Avenue, New York 59; Credle Equipment, Inc., P.O. Box 10, Potsdam; Rupp Equipment Co., 1011 Buffalo Road, Rochester; Credle Equipment, Inc., 309 N. Geneva Street, Utica 4.
- N. CAR.—Mitchell Distributing Co., 5405 Hillshire Blvd., Raleigh; Mitchell Distributing Co., Spruce Pine.
- N. DAK.—Myhra Equipment Co., 1425 Front Street, Fargo.
- OHIO.—Bode-Finn Co., 2650 Spring Grove Ave., Cincinnati 14; Contractors Motor Unit, Inc., 1625 East 24th Street, Cleveland; W. T. Walsh Equipment Co., 12750 Berca Road, Cleveland; G. W. Clements Equip. Co., 476 Avondale Avenue, Columbus; Bode-Finn Co., 1518 E. First Street, Dayton 3; Construction Mach. & Sup., 128 S. St. Clair Street, Toledo 4.
- OKLA.—Victor L. Phillips Co., 1222 West Main Street, Oklahoma City; Victor L. Phillips Co., 1101 East Archer, Tulsa.
- ORE.—Mixermobile Distributors, Inc., 8027 N. E. Killingsworth St., Portland 20.
- PENNA.—Furnival Machinery Co., P.O. Box 786, Harrisburg; Furnival Machinery Co., Lancaster Avenue at 54th, Philadelphia 31; Watson Equipment, Inc., Rte. 19 at Pine Creek Road, P.O. Box 9707, Pittsburgh 29, Pa.
- R. I.—Hedge & Mattheis Co., 200 New Port Avenue, Providence.
- S. CAR.—Van-Lett, Inc., 430 Meeting St., W. Columbia.
- S. DAK.—Stan Houston Equipment Co., 309 E. 12th St., P.O. Box 90, Sioux Falls.
- TENN.—Choctaw, Inc., Tupelo at Vandale, P.O. Box 2057, Memphis 2.
- TEXAS.—J. W. Bartholow Machy. Co., 1221 South Lamar Street, Dallas 2; Lively Equipment Co., 1423 E. Missouri, P.O. Box 1430, El Paso; South Texas Equipment Co., Inc., 5500 Navigation Blvd., Houston 12; Conley-Lott-Nichols Co., 3601 Avenue "H", Lubbock; Contractors Machy. Co., 302 Dora St., P.O. Box 8057, San Antonio 1.
- UTAH.—Heiner Equip. & Supply, 501 West 7th South St., Salt Lake City.
- VT.—Hedge & Mattheis Co., Bridge Street, Bellows Falls; Hedge & Mattheis Co., 285 South Main Street, Rutland.
- VA.—Capital Equipment Co., Inc., 2050 Westmoreland Avenue, Richmond; Bemis Equipment Corp., 1331 Shenandoah N. Road, Roanoke.
- W. VA.—M. R. Hamill, Inc., 1824 Pennsylvania, P.O. Box 947, Charleston 23.
- WASH.—Air-Mach, Inc., 614 Elliott Ave. W., Seattle 99; Yukon Equipment Co., Coleman Bldg., Seattle 4; Western Equipment Co., 1227 Olive, Box 2156, Spokane.
- WISC.—Hunter Trac. & Mach. Co., 327 South 16th, Milwaukee 3.
- CANADA.—W. A. R. McGraw, Ltd., P.O. Box 335, 6 McDougall Court 10082-100 St., Edmonton, Alberta; Contractors Mach. & Equip. Ltd., 194 Barton Street East, Hamilton, Ontario; Dietrich-Collins Equipment Co., 890 S. W. Marine Drive, Vancouver, B. C.; Automotive Products Co., Ltd., 3252 Wellington Street, Montreal, Quebec; Modern Machinery, Ltd., 120-4th St., West, Quebec City, Quebec.
- EXPORTERS—Colunga Exporters, Inc., 1105 S. E. Morrison St., Portland; North Pacific Corp., 1809 N. E. 40th Ave., Portland.

CONTRACTORS AND ENGINEERS

Reconstructed Highway Gets Road-Mix Top

Contractor Grades and Surfaces State Route 28 Through New Hampshire's Resort Area

• CAPITALIZING on the many and varied wonders of nature has done much to improve the economy of New England's border states, but it has also caused some sharp jumps recently in vehicle counts on resort-area feeder routes.

One of New Hampshire's major highway - reconstruction projects completed this spring was on State Route 28, just east of the capital city of Concord. Carrying most of the traffic from Boston to Lake Winnepesaukee and Crawford Notch in the White Mountains, the road needed both widening and re-locating. Traffic counts averaged nearly 1,000 per day, and the old 20-foot built-up tar surface was taxed above its limit.

To speed reconstruction, the New Hampshire State Department of Public Works and Highways awarded two separate contracts last year in this vicinity, separated by a recently constructed traffic circle. Grading work proceeded rapidly through the summer and fall and was just about completed by winter. Bituminous road-mix is being laid this spring.

Reconstructed Road

The new road has a 24-foot pavement. Designed for speeds of 50 mph, it has a maximum curvature of 5 per cent and a maximum gradient of 6 per cent.

The crushed-gravel bituminous road-mix pavement is 3 inches thick and is crowned 3 inches at the center. The 16 to 24-inch-thick gravel base course extends out to the slope lines. Shoulders are 5 feet wide sloping 18 to 1 from the pavement. In fills up to 10 feet high the sideslopes are 4 to 1; above that the slope is 2 to 1. Slopes are 1 to 2 in rock cuts and 2 to 1 in earth cuts.

A 5-mile section of Route 28 just south of the Route 9 intersection was awarded to G. Rotondi & Sons of Melrose, Mass., as a \$394,000 contract. The contractor began work about the middle of June and completed most of the grading by December.

Because traffic had to be maintained at all times, only work on the relocated sections was done during the busy summer months. This condition made it possible to do the job at an easy pace and with a small amount of equipment.

Clearing was done mostly with three McCulloch one-man chain saws. Local lumber mills took away the timber.

Excavation

Earth excavation totaled 120,000 cubic yards and consisted mostly of silt and gravel. Ledge rock totaled 8,000 yards. Drilling equipment consisted of two Ingersoll-Rand wagon drills and one Worthington 500-cfm compressor. Holes were drilled

8 to 10 feet deep and on 4-foot centers. Timken carbide bits were used on hard rock and regular steel bits on ordinary rock. Usually, 150 to 200 holes were loaded for each shot. Atlas 40 per cent dynamite was used with straight caps.

Rock was excavated with a 1½-yard Northwest shovel and hauled by two rear-dump Euclids. A 2-yard Lorain 820 worked the earth



A 2-yard Lorain 820 and an 8-yard Sterling dump truck at work on the grading of State Route 28, Melrose, Mass. G. Rotondi & Sons, is the contractor on this stretch.

cuts with five Sterling 8-yard dump trucks. Where conditions permitted, a Caterpillar and a LeTourneau scraper were used. Hauls ranged between 500 and 1,000 feet.

One International TD-14 and two TD-18's worked the fills. Compaction was achieved with the hauling equipment.

(Concluded on next page)

BAKER

announces

NEW

a completely

Power Control Unit

BAKER PCU-75

FOR THE OPERATOR—easier, more positive control with greater accuracy at all speeds.

FOR THE OWNER—longer operating life with less maintenance.

FOR THE SERVICE MAN—quick, simple adjustments—easy to clean and lubricate

NEW Improved Brakes—faster on-and-off, easier to control. Single-point adjustment. Rugged, simplified design increases both efficiency and wear life.

NEW Sheave Mountings—upper reeving sheaves pivoted same as lower fairleads and mount-on anti-friction bearings to provide more uniform cable-winding.

NEW Streamlined Design—more compact, fewer obstructions. Clutches completely enclosed to keep out dirt, grit, moisture.

CHECK THESE FEATURES

NEW Multiple Disc Clutch—smoother operating, longer lasting with *higher capacity* than any other type of clutch. Adjustments are more permanent. Shorter lever travel—only 5"—reduces operator fatigue.

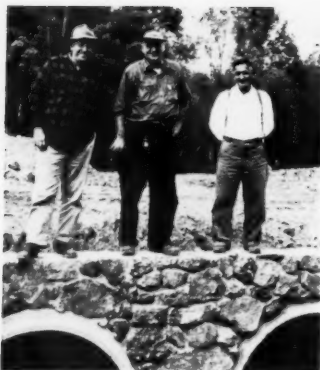
NEW Adjustable Hand Levers—quickly adjusted by operator for *length, angular position, and height*. New, horizontal swing-action lightens hand load.

THE BAKER MANUFACTURING COMPANY
Springfield, Illinois

Stop in at your local Baker, A-C Dealer today—get full details on the new Baker Power Control Unit No. 75—or write direct to The Baker Manufacturing Company, Springfield, Illinois.

BAKER

Always look to Baker for the Next Advancement—FIRST



Joel Hill, Resident Engineer, George Kenyon, Superintendent for G. Rotondi & Sons, and O. Racine, Inspector.

Reconstructed Highway Gets Road-Mix Top

(Continued from preceding page)

Gravel for the base course was excavated by a 1½-yard Lorain in a pit near the middle of the job. The 8-yard Sterlings did the hauling. One Allis-Chalmers and one Caterpillar grader shaped the gravel base course. Both equipment and traffic did the compacting.

Road-Mix

To prepare for the class C-2 road-mix, the gravel base was primed with MC-2 cutback, 0.5 gallon per square yard penetration, and 0.25 gallon RC-1 seal. It was applied 26 feet wide, or a foot beyond the pavement on each side, to prevent raveling. Where a reshaping was required this spring, 0.25 gallon was applied, followed by 0.25 gallon seal just before the road-mix was laid.

The 3-inch-thick road-mix was made up of washed crushed gravel mixed with cutback asphalt at the rate of 2 gallons per square yard. Bitumen was first applied at one gallon per square yard, mixed, followed by a shot of 0.65 gallon, and mixed again.

A seal coat of 0.25 gallon was then added and covered with a ½-inch layer of peastone. A fog application of 0.10 gallon finished the job. RC-4 was used for cutback asphalt.

Crushed gravel and peastone was graded as follows:

Sieve	Per Cent Passing Crushed Gravel	Peastone
1½-inch	100	....
1¼ "	90-100	....
1 " "	35-70	....
¾ " "	0-5	....
½ " "	....	100
¾ " "	....	30-60
No. 4	....	0-15
No. 8	....	0-5

Personnel

George H. Kenyon, Superintendent for G. Rotondi & Sons, the contractor, employed about 40 men.

Joel Hill was Resident Engineer for the New Hampshire Department of Public Works and Highways, which is headed by F. D. Merrill, Commissioner, and J. O. Morton, Chief Engineer.

New Hunt Process Plant

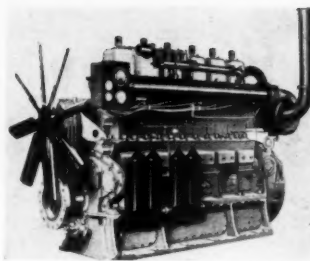
Hunt Process Co., Los Angeles, Calif., manufacturer of concrete-curing compounds and protective coatings, announces that Hunt Process compounds are now available at the company's new plant in Ridgeland, Miss. The plant operates under the name of Hunt Process Corp.—Southern.

Turbocharged Diesels

A turbocharged engine having only 426-cubic-inch displacement is offered by the Waukesha Motor Co., Waukesha, Wis. The company has now applied turbochargers to five basic diesel-engine sizes, three of which are for transportation or industrial service. The two largest serve as complete power units.

The primary reason for turbocharging is to obtain higher specific output from an engine. This means a better horsepower to weight ratio, improved mechanical efficiency, and, as a result of the latter, better fuel efficiency. With turbocharge the rating of the company's 147-hp engine becomes 185-hp and a 406-hp unit jumps to 570 hp. All of the units are 6-cylinder 4-stroke cycle units.

All Waukesha turbo-supercharged diesels use American Bosch injection equipment. Turbocharged models



have the usual features of all Waukesha diesels, the manufacturer points out.

For further information write to the company, or use the Request Card at page 18. Circle No. 812.

Data on Self-Priming Pump

A bulletin on a 1½-inch self-priming centrifugal pump has just been issued by Carver Pump Co., Muscatine, Iowa. It illustrates and

describes the gasoline-engine-driven portable pump. The pump will handle 6,000 gph at 17 feet suction lift (including friction) against 17 feet total head and will prime in less than 30 seconds with the pump 10 feet above water.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 767.

Directs Design for Martin

Harold Wahl is new Chief Development Engineer of Martin Machine Co., Kewanee, Ill., manufacturer of trailers. He joins Martin after 17 years' experience with Hyster Co., and brings to his new position a varied background in the equipment industry. In his new post with Wahl he will supervise new-product design and trailer improvement.

Now... DESIGN SIMPLICITY



Mosby

Asphalt-Barrel Heater And Storage Tank

A new combination asphalt-barrel heater and storage tank is offered by K. E. McConaughay, Lafayette, Ind. Asphalt barrels are placed in the heater in an inverted vertical position, with bungs removed, on an open grid. As the asphalt heats and melts, it runs through the grid into the heated storage tank under the grid, where it is kept hot until used.

The Model 24-S-3000 heater accommodates 24 barrels in the upper heating chamber, and 3,000 gallons in the lower storage reservoir. The gasoline-engine-driven bituminous pump is used for recirculating to increase the speed of heating and to discharge the contents of the reservoir into pressure distributors, kettles, and supply tanks.

Other models are made in capacities of 6, 12, and 24 barrels and



The Model 24-S-3000 combination asphalt-barrel heater and storage tank.

with built-in storage tanks that hold 500, 1,000, 2,000, and 3,000 gallons.

For further information write to the company, or use the Request Card at page 18. Circle No. 735.

Portable Compressor

A new 75-cfm portable air compressor has been announced by O. K. Clutch & Machinery Co., Florence St., Columbia, Pa. According to the manufacturer, the new model, the Hornet 75, handles the same work as the company's present 85-cfm model, and approximately twice as much work as the present 60-cfm model. It powers a 45-pound paving breaker, a 45-pound rock drill, two backfill tampers, two clay spades, two riveting guns, or any combination of two small tools.

The single-stage gasoline-powered compressor can be handled by one man. It weighs 1,280 pounds, and can be towed behind a passenger car. The unit is mounted on a 3-wheel trailer with a retractable pivot wheel. It uses a 6-cylinder Chrysler engine which has been rebuilt for compressor service. Three cylinders of the engine are used for air compression and the other three for power.

For further information write to the company, or use the Request Card at page 18. Circle No. 789.

Low-Alloy-Steel Electrodes

A booklet describes the use in welding of new low-alloy-steel electrodes that are said to replace those containing higher amounts of critical alloys. The new electrodes, made by Arcos Corp., 1500 S. 50th St., Philadelphia 43, Pa., contain 1½ to 2 per cent nickel, 0.6 to 1 per cent molybdenum and 0.1 to 0.3 per cent vanadium. They are produced from ordinary low-carbon open-hearth steel wire.

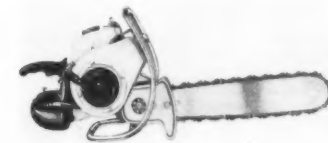
A military specification has been drawn up for the electrodes, calling for three grades based upon strength levels.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 740.

Represent Union Wire Rope

Two representatives of Union Wire Rope Corp., Kansas City, Mo., have taken over new posts, one in California, and one in Florida.

Joseph T. Broadus, who has been active in Union Wire Rope since 1937 and who has had much experience in the field, is statewide representative for the company in California, with headquarters at Sacramento. In the southeast, Frank W. McSpadden, working out of Jacksonville, Fla., represents Union Wire Rope in Georgia, North Carolina, and South Carolina.



A new lightweight chain is offered by the Clinton Chain Saw Division, Clinton, Mich. For further information write to the company, or use the Request Card at page 18. Circle No. 713.

counts more than ever...

and it's yours with **BUCYRUS-ERIE** *excavators*

From boom point to treads, the advanced engineering of Bucyrus-Erie excavators shows up in neat simplicity all along the line. They're trim and compact, have no excess weight; this means easy handling, fast operating. With lightness they combine great strength; this means low maintenance, real dependability. Machinery is conveniently arranged, accessible; this means it's easy to keep a Bucyrus-Erie in top working condition.

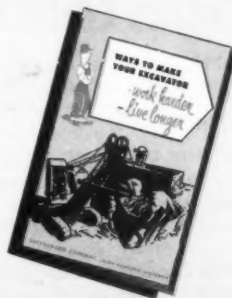
This basic design simplicity pays you extra dividends in big output and long service life. Today, with critical materials for new equipment in short supply, that's more important than ever.

56E52C

HOW TO MAKE YOUR EXCAVATOR WORK HARDER ... LAST LONGER

Write now for a new 32-page booklet loaded with valuable hints on:

- Preventive Maintenance
- Lubrication
- Adjustments
- Engine Care
- Safety ... and many other important topics



BUCYRUS-ERIE

SOUTH MILWAUKEE, WISCONSIN

¾-TO-4 YD. GASOLINE, DIESEL, SINGLE-MOTOR ELECTRIC EXCAVATORS
HYDROCRANE-HYDROHOE

Most Compared - Most Preferred

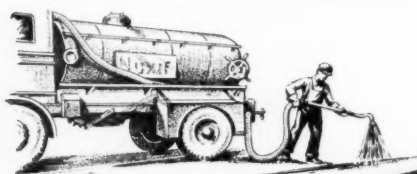
Front-End Loaders

Two new front-end loaders with 4-wheel planetary drive and 4-wheel power steering are announced by Mixermobile Mfg., 8027 N. E. Killingsworth St., Portland 20, Oreg. These Scoopmobiles have two power-axle elements hinged together with an oscillating center-pin steering coupling. The coupling allows an oscillating twist to the axles and is said to retain full power on all four wheels in any degree of the turning radius. Power is transmitted to all four wheels through 3:1 planetary gearing. Hinged-coupling steering improves lateral spotting of the loading bucket.

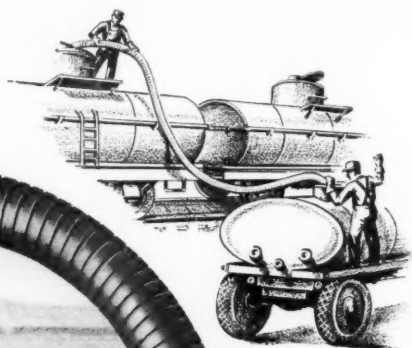
Discharge height of the model LD5 is 8 feet 6 inches and for the LD10 9 feet. Transmission has 8 speeds forward and back. Diesel power is optional at extra cost. The operator cab of the pneumatic-tired units has



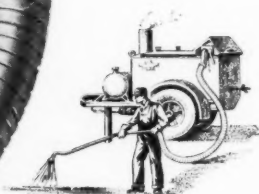
The Model LD5 4-wheel planetary-drive Scoopmobile loads at a gravel pit.



TAR and ASPHALT TRUCKS



TANK CAR UNLOADERS



TAR KETTLES



**FLOWS HOT TAR FREELY
...DEFIES CONSTANT ABRASION, HEAT**

**LEAK-PROOF, HEAT-PROOF, WEAR-PROOF
PENFLEX FLEXIBLE HOSE ASSURES SAFE TROUBLE-FREE TRANSMISSION OF HOT TAR**

From coast to coast, leading manufacturers and users of road surfacing equipment rely on tough, flexible PENFLEX interlocked metal hose for safe, free-flowing, trouble-free transmission of hot tar and asphalt. Tight as pipe—but flexible—rugged, leak-proof PENFLEX hose defies constant flexing, crushing, kinking, abrasion and heat . . . eliminates danger of fires.

There's a tough PENFLEX hose for every type

Pennsylvania Flexible Metallic Tubing Company, Inc., 7202 Powers Lane, Phila. 42, Pa.
Branch Sales Offices: Boston • New York • Chicago • Houston • Cleveland • Los Angeles

surfacing equipment. On tar mixers, tar and asphalt trucks, tar kettles, tank car unloaders—used both as flexible metal connections and as insulated hand hose for road spraying and patching units—PENFLEX assures top safety, efficiency, and dependability.

To solve your toughest tubing problems, call on PENFLEX engineering (flexineering) and the complete PENFLEX line of sturdy, hard-wearing flexible metal hose and heat-proof couplings. For full details on application of PENFLEX tubing to all types of tar and asphalt equipment, write today for Bulletin 91.

penflex
HEART OF INDUSTRY'S LIFE LINES



safety glass and windshield wipers.

Capacity of the LD5 is $\frac{3}{4}$ to 1 cubic yard and of the LD10 1½ to 2 cubic yards.

For further information write to the company, or use the Request Card at page 18. Circle No. 712.

Booklet on Gas Engines

A new 4-page bulletin describing the company's spark-fired gas engines is announced by Nordberg Mfg. Co., Milwaukee 1, Wis. Models FSE-9 and FSE-13 are discussed.

The engines are built in 9 and 13-inch bore sizes and range from 265 to 4,260 hp. The new bulletin describes the thermal efficiency of these engines and presents a heat-balance diagram of the Supairthermal engine, whose efficiency is said to be over 40 per cent. Expansion ratios of 12½:1 and controlled air-fuel ratios by variable inlet-valve timing are features emphasized by the manufacturer.

The bulletin also contains information on the ignition systems of the engines along with other construction and operating features. Horsepower ratings of the various non-supercharged, supercharged, and intercooled, and Supairthermal spark-fired engines are also given.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 754.

Concrete Pipe Co. in Miami

A new plant for Universal Concrete Pipe Co., Columbus, Ohio, opened in the Miami, Fla., area in January. Festivities marked the opening, and visitors inspected the steel-frame building at 1525 Stirling Rd., Dania, where plain pipe from 4 to 24 inches and reinforced pipe from 24 to 156 inches will be manufactured in 8-foot lengths and longer. The new plant will also make Flexicore roof and floor slabs, and other precast concrete products.

W. M. Lafferty is Manager of the Dania branch; Francis Aumand is Office Manager; and John A. Harris is District Sales Manager with offices at Tallahassee, Fla. Sales and production of the new plant are linked with Universal's other Florida plants at Ocala and Tampa and sales offices at Tallahassee and St. Petersburg.



The Quinn Standard is known as the best in the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS
For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 18" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices and estimates sent on request. Also manufacturers

QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1645-12TH BOONE IA

CONTRACTORS AND ENGINEERS



When confronted with the problem of cutting large stone lintels to size, the crew of Gust G. Larson & Sons, Inc., Rockford, Ill., contractor, removed the cutting head from their Clipper Model HD masonry saw and placed it on the Clipper convertible 4-wheel cart so that the saw could be operated on elevated tracks. For further information write to Clipper Mfg. Co., 2800 Warwick, Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 868.

Helicopter Survey Test

The Corps of Engineers, U. S. Army, has been running a test to determine the feasibility of triangulation surveys across inaccessible terrain by simultaneous observations on a helicopter from several ground stations. A project of the Engineer Research and Development Laboratories, Fort Belvoir, Va., the Helicopter Survey Test called for the participation of about 30 men, mostly civilians, and extended over a period of some 45 days. Since most of the test was conducted at night, a light suspended below the helicopter was used as an observing target.

Field headquarters for the test were at Casa Grande, Ariz., and the area selected was about 30 miles wide and 100 miles long. Triangulation stations from which observations were made were previously established in the rear and forward areas by the U. S. Coast and Geodetic Survey. By the use of 2-way radio communication and precision survey instruments, ground observers were able to make simultaneous determinations of directions from their stations to the helicopter.

The results of the test—longitudes, latitudes, and elevations—are being checked against previously determined results arrived at by conventional survey methods.

Booklet on Jaw Crushers

A new bulletin on jaw crushers is available from the Universal Engineering Corp., 620 C Ave., N. W. Cedar Rapids, Iowa. It describes eleven sizes from a 10 x 16-inch to a 30 x 42-inch.

The Universal Series WRB crushers use the Universal overhead eccentric principle which provides two distinct crushing blows with each revolution of the eccentric shaft. Other features include one-piece welded-steel bases, long manganese-steel jaws, accessible lubrication points, and adjustment for product size. Capacities range from 5 to 495 tons per hour depending upon crusher size and stage of reduction.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 816.

Diesel Torque Converter

A booklet on its diesel-engine torque converter has been published by the Detroit Diesel Engine Division, General Motors Corp., 13400 W. Outer Drive, Detroit 28, Mich.

The book explains the operating principles of the unit and is illustrated with cutaway drawings and photos of torque-converter units at work in typical installations. Graphs show the horsepower characteristics of engines equipped with GM torque converters.

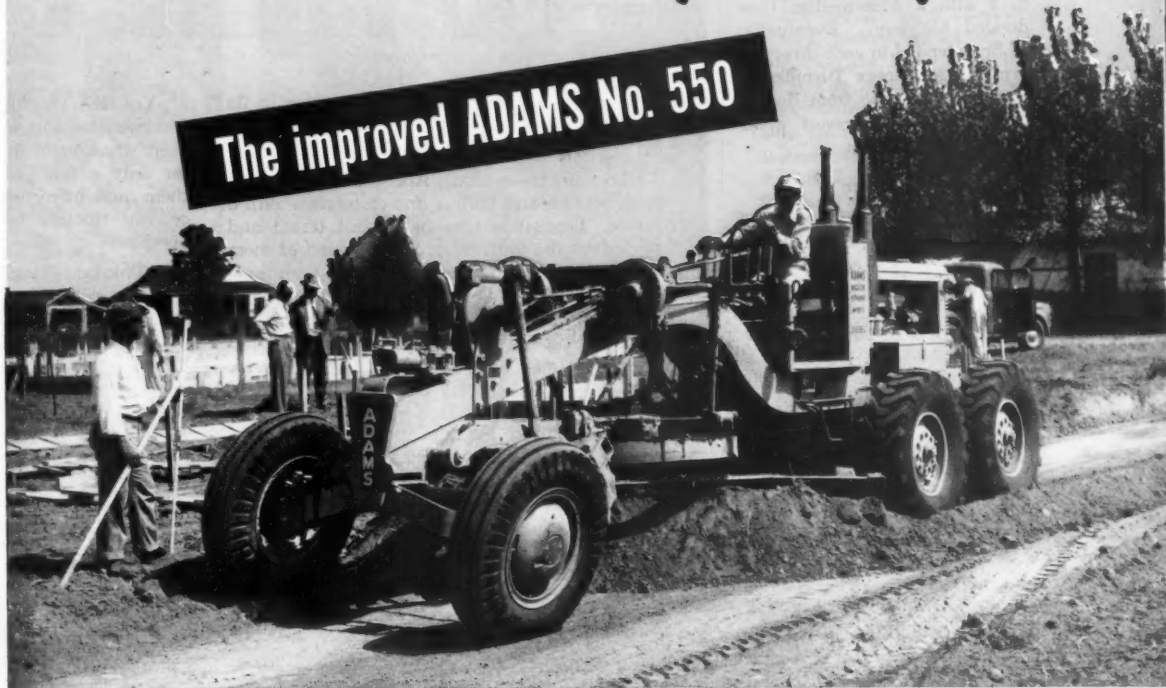
To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 809.



Here's a test model of the Drake Dreadnought, a 30-ton 3-engine snow plow said to be the world's largest. Airport snow clearance is its specialty—it is designed to remove 13,000 cubic feet of snow in a minute and to spray it 800 feet away. The manufacturer is Drake American Corp., 20 E. 50th St., New York, N. Y.

Headed for New Popularity

The improved ADAMS No. 550



A Heavy-Duty 100 H.P. Grader with New Constant-Mesh Transmission

You have only to check the new and improved features that characterize the Adams No. 550 Motor Grader to know that here is one of the most efficient and versatile machines you can possibly own:

● **Powerful Diesel Engine:** Lots of lugging ability—easy to start—economical, dependable . . . Rubber mounted for vibration-free operation.

● **NEW Constant-Mesh Transmission:** Quick, easy gear shifts . . . Helical gears—all on roller bearings—insure smooth, long-life performance . . . Finest transmission ever put into a motor grader.

● **8 Forward Speeds:** More working speeds and a higher travel speed (25 mph) than other graders . . . Save time—increase work production.

● **NEW 4 Reverse Speeds:** Up to 13.2 mph . . . Speed work on many jobs—backing between forms, bucking snow, etc.

● **NEW "Creeper" Gears:** Optional in transmission at nominal cost . . . Provide 3 extra-low speeds—.22 to 1.76 mph . . . Valuable where slow-speed operation is desirable.

● **Positive, Easy-Working Controls:** Dependable, accurate adjustments—easy, natural steering.

● **Big, Comfortable Cab:** Roomy convenience for maximum operator efficiency—2-way adjustable seat.

● **NEW Double-Action Braking System:** Operates on wheels and transmission—quick, safe stops with less pedal effort.

● **NEW Foot Accelerator:** Drive grader like truck—great in traffic. Use it or hand throttle when working.

Discover how the new No. 550 will step up production and cut costs for you. See your local Adams dealer.

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, INDIANA

Make your next motor grader an



Cut Deep Rock Gorges On Tough Grading Job

Twin 60-Foot Cuts Blasted Out of Massachusetts Hillside For Boston to Lowell Expressway

• ROCK cuts up to 60 feet deep on an eastern Massachusetts grading job provided some of the toughest highway-excavation work encountered last year in New England.

The first contract let by the Massachusetts Department of Public Works on the Boston to Lowell expressway required the removal of an estimated 337,000 yards of rock. And over half of that amount was in one twin cut.

When completed, the 4-mile job near the town of Bedford, Mass., will replace a twisting stretch of U. S. 3 with a wide-median type of divided highway. Eventually, it will be extended in each direction to form the Middlesex Turnpike, a proposed funnel route from Boston to New Hampshire's resort areas in the White Mountains.

Latest Design

The new superhighway features the latest designs used by Massachusetts. The pavement on both northbound and southbound sections is 34 feet wide and is separated throughout by a 100-foot median strip. This unusual width eliminates headlight glare and head-on collisions, but requires both double fills and double cuts.

The 2½-inch-thick bituminous-concrete pavement consists of two 12-foot lanes flanked by a 10-foot parking strip. The surface will be laid in two 1¼-inch courses. The base course is 4½ inches of crushed stone penetrated with 1¾ gallons per square yard of bitumen and covered with keystone. The slope is ¾ inch per foot with the crown 12 feet in from the inside pavement edge.

The 7-inch surface is supported by 12 inches of gravel subbase carried out to the edge of the embankment.

In fills, side slopes are either 2 to 1 or 4 to 1. Guardrails are used with the 2 to 1 slopes. Slopes in earth cuts are 3 to 1 and in rock cuts are 1 to 4. Drainage slopes in rock cuts are 5 feet wide and slope at 4 to 1.

Grading Contract

The \$2,036,000 grading contract was awarded to Peter Salvucci of Waltham, Mass. The contractor started clearing operations in February of last year with four Home-lite one-man electric chain saws running off two generators. A Caterpillar D7 and an Allis-Chalmers HD-5 tractor-dozer did the rough clearing.

Besides the huge amount of rock excavation, Salvucci also had to move 520,000 cubic yards of earth and 70,000 cubic yards of peat. Earth borrow totaled nearly 200,000 yards and gravel borrow 100,000 yards.

The rock excavation, however,

was the unusual feature of the job. Almost 200,000 yards had to be blasted out of the two parallel gorges at the north end of the job.

Blasting

Right at the beginning Salvucci subcontracted all the blasting work to the Curly Construction Co., of Teaneck, N. J. Foreman Ed Smith did all the drilling with six Worth-

ington wagon drills. Air was supplied by four Ingersoll-Rand compressors—three 600-cfm and one 315-cfm.

Holes were drilled on 4, 5, and 6-foot centers, depending on the depth. Four-foot centers were used on holes up to 12 feet deep, 5-foot centers on holes between 12 and 16 feet, and 6-foot centers on the 24 to 30-foot lifts. About 100 holes were drilled for every shot.

Using both 40 and 60 per cent Atlas and Du Pont dynamite, Smith blasted 1,000 yards a day in the big cuts. Regular delay fuses were used and shots were fired usually in five series across the cut. About ½ pound of dynamite was used per yard of excavation.

On the big cut, Smith used his three 600-cfm compressors with an 8-inch air line running up to 1,000 feet to the drills. The deep gorges were blasted out with three lifts



N. B. Allen, Resident Engineer for the Massachusetts Department of Public Works, and Andrew Bruschette, Superintendent for Peter Salvucci.

averaging 20 feet each.

Timken carbide bits ranging from 2 to 2¼ inches did all the drilling. They lasted from 1½ hours to all day, depending on rock conditions.

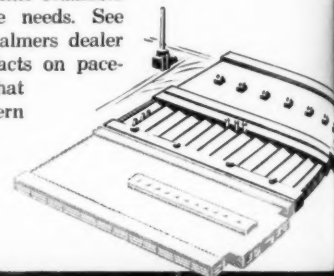
There's more to tractors than meets the eye . . .

The real "pay-off" value of any tractor to its owner is how it measures up to the standards set by today's modern production methods.

To meet these needs, Allis-Chalmers started from scratch and built a line of tractors with a future. Thousands now have been tested and proved on the toughest proving ground of them all, actual jobs, and they have more than measured up to expectations. Owners have found that these tractors set new standards of performance . . . that they give greater output with less down time . . . plus more profit, whether pulling, pushing, digging or dozing. Operators have discovered new ease and comfort in operation, too; and mechanics say these are the easiest-to-service tractors that they have ever worked on.

Yes, the "family circle" of users of Allis-Chalmers tractors is growing constantly. Many users who bought their first Allis-Chalmers tractor only a few years ago now have fleets of them, and many others who operate only one or two tractors have become Allis-Chalmers boosters.

This acceptance is the springboard behind a big plant expansion at Springfield, Illinois, which will enable Allis-Chalmers to meet your future needs. See your nearby Allis-Chalmers dealer now for the inside facts on pace-setting tractors that measure up to modern production methods.



An Ingersoll-Rand air-powered sharpening rig was used to rehabilitate the bits.

Shots Every Day

Shots were made at the end of each day to keep plenty of work ahead for the hungry Lorain shovels. Salvucci used five 2-yard Lorains with 12 Euclid rear-dump trucks with 5 bottom-dump trucks. Average hauls ranged between 2,000 and 3,000 feet. One deep 60-foot fill just south of the gorge took most of the excavation from the big twin cuts. The 5 shovels averaged about 7,000 yards of ledge and fill each day. Four Caterpillar scrapers pulled by D8's excavated earth in suitable areas.

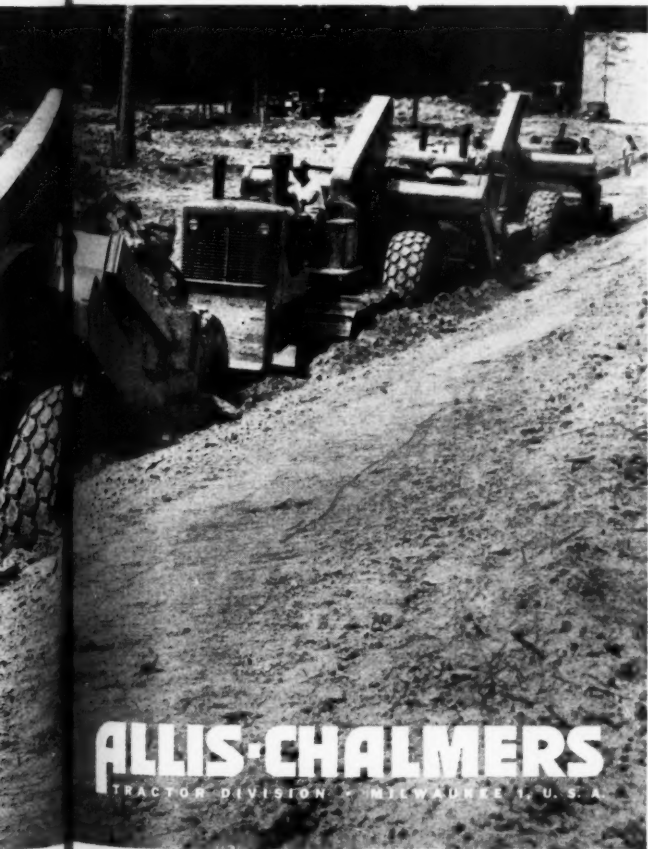
A 2-yard Lorain shovel loads a Euclid in deep rock cut on the relocation of U. S. 3 to form the Middlesex Turnpike in Massachusetts. Peter Salvucci, Waltham, Mass. was the contractor.



From haul road to highway to heavy construction . . . wherever big production is essential to the job, this big HD-15 has more than proved its worth. With 109 drawbar hp. and 27,850 lb. weight, it works quickly, efficiently as a dozer, tractor-shovel, puller or pusher.



This 72 drawbar hp., 18,800-lb. HD-9 is making friends in every field because its power and weight make it ideal for dozens of today's jobs. And, operators can gain up to 25 percent more production on short dozing jobs because they can go from any forward to any reverse speed with just one shift.



ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE, U. S. A.



The 40 drawbar hp., 11,250-lb. HD-5 is a versatile jack-of-all-trades for fleet owners as well as one-man operations . . . with hydraulically controlled Tracto-Shovel, it's equally useful loading bulk materials, dozing, digging basements, dozens of other jobs.

Here's real tractor teamwork . . . four HD-20's in a "train" — three pulling scrapers, one pushing — all working together for big production. With torque converter drive, they synchronize speeds at contact . . . automatically load at the fastest speed that job conditions permit, with less strain on operators and equipment. With 175 engine hp. and 41,000 lb. weight, the HD-20 is today's new yardstick of crawler tractor performance.

Rock was spread in 3-foot layers and earth in 1-foot layers. Compaction was achieved with the hauling equipment, rollers and dozers.

Other equipment included a Lima backhoe for drainage work, and a P&H dragline for peat excavation. Working in the cuts and fills were two International TD-24's, two TD-18's, a Caterpillar D8 and a D7, and one Allis-Chalmers HD-15. A Gradall worked on slopes and trenches, and was sometimes useful in dislodging loose rock from the sides of steep cuts.

Gravel Subbase

Gravel subbase was excavated from pits adjacent to the job and hauled in ten 10-wheel Mack trucks. Two Austin-Western and one Galion grader spread the gravel. One tandem and one 3-wheel Buffalo-Springfield did the rolling.

With such a large fleet of construction equipment engaged in several types of operation, it was necessary to keep in close touch with all key men. A system of Link 2-way radios did the job. The field office could get in quick contact with several pickup trucks on the job, and even the home office in Waltham. The latter setup even saved considerable telephone cost. Probably the most unique device in the system was the radio-connected loudspeaker on the top of the Superintendent's truck, which permitted him to hear messages several hundred feet away.

Personnel

Andrew Bruschette was General Superintendent for Peter Salvucci. N. B. Allen was Resident Engineer for the Massachusetts Department of Public Works, which is headed by William C. Tuttle, Chief Engineer.

Driscoll Again Heads BTEA

Fred J. Driscoll, President of George F. Driscoll Co., general contractor, was unanimously re-elected President of the Building Trades Employees' Association of New York, N. Y., at its annual meeting in February. It will be Mr. Driscoll's third term.

Other officers re-elected were: Vice President, Harry J. Stellmann of Starrett Bros. & Eken; Second Vice President, William B. F. Drew of J. L. Murphy, Inc.; Third Vice President, Joseph A. Courter, head of Courter & Co., Inc.; Treasurer, William Angus, President of William Angus, Inc.; and Secretary, W. Arthur Riehl.

Catalog of Rock Bits

Rock-drill bits are listed and described in a new booklet from Brunner & Lay Rock Bit Corp., 2514 E. Cumberland St., Philadelphia 25, Pa.

Paving-breaker tools, sheathing drivers, dirt tampers, clay-digger tools, pneumatic star drills, chipping-hammer tools, hollow drills, tungsten carbide rock bits, and hollow-drill steel are among the items. Descriptions of the products are amplified by tables of dimensions and weights. All items are illustrated.

To obtain this literature write to the company or use the Request Card that is bound in at page 18. Circle No. 718.

Wellman Promotes Shew

Fred B. Shew has taken over the post of Sales Manager of the Bucket

Department of The Wellman Engineering Co., Cleveland, Ohio. Mr. Shew was formerly District Manager of the company's Chicago office.

ROAD BUILDERS—IT'S SENSATIONAL

STEEL WIRE **BIG PECKERWOOD** DRAG BROOMS

IT'S FRAMELESS

TRADE MARK REG.

NO FRAME REQUIRED

6 INCHES WIDE AND ANY LENGTH TO 12 FEET
NAME YOUR LENGTH — ASSEMBLE YOUR OWN
IN ANY SHAPE WANTED — IN MINUTES — NOT HOURS
MADE WITH KILN DRIED 6" WIDE
HARDWOOD AND HEAVY GAUGE
SPRING STEEL WIRES
TRIPLE WIRES OUT EACH HOLE



ILLUSTRATION
OF 12-FOOT SECTION

ONLY \$3.50 RUNNING FOOT

THE TOUGHEST WIRE DRAG BROOMS EVER BUILT

VAN BRUSH MFG. CO.

LITTLE PECKERWOOD

STANDARD UNIT SIZE
MADE TO FIT YOUR FRAME
3" Wide, 15" Length

with 2 Bolts.
Double Wires
Out Each Hole.

OUR DRAGS
NOT STAPLE SET.
BOTH STOCK ITEMS.



NOW \$2.50 EA.
PRICES F.O.B. K.C., MO.
327 S.W. BLVD. SINCE
KANSAS CITY, MO. 1928



Full heading after both top heading and bench have been excavated. Excavated dia.—51 ft.



Main Jumbo for driving top heading—mounts 17 T-350 long-feed drifters on Joy Hydro Drill Jibs.



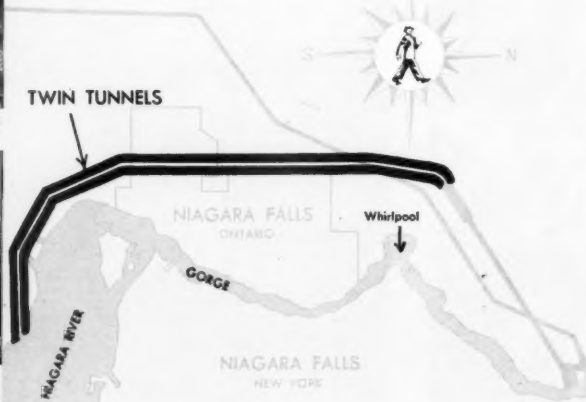
Jumbo for bench drilling—suspended from roof supports—mounts 13 Joy T-350 long feed drifters.



8 Joy W.N.-102 compressors—referred to by contractor as "ultimate in compressor usage."



Series 1000 Axivane Fans in ventilation arrangement. Tracks permit adding fans as desired.



PROGRESS REPORT ON THE WORLD'S LARGEST TUNNEL

SIZE: Twin Tunnels 51' Dia., 5½ mi. length.

LOCATION: Niagara Falls, Ontario.

EQUIPMENT USED (All Joy Installation):

114 T-350 Drifters on LW-6A Feeds on Hydro Drill Jibs.

24 W.N.-102 Semi-Portable Air Compressors.

Series 1000 Axivane Fans—added as needed to maintain air volume.

The world's largest tunnel is being bored out of solid rock with the help of Joy rock-drilling equipment, ventilating fans and air compressors.

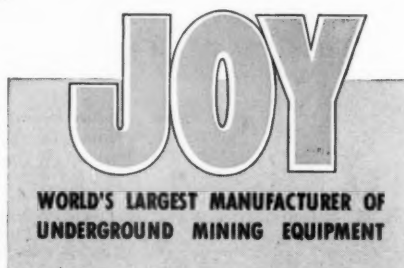
4,375,000 cu. yds. (9,923,000 tons) of rock will be excavated to form the huge twin tunnels. These 5½ mile tunnels will convey water from the upper Niagara River beneath the city of Niagara Falls, Ontario, to a point near the Whirlpool Rapids, well below the Falls. Water thus diverted for hydro-electric power purposes would supply the water needs of 200 million people!

This is the first large tunnel operation where drilling has been mechanized. The "All Joy Equipment" installation confirms Joy's position as leader in the heavy construction and tunneling equipment market. Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.

Consult a Joy Engineer



W&C 4-507



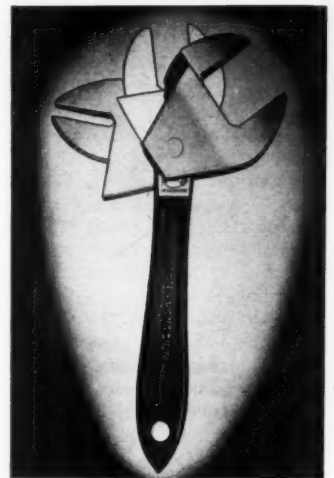
A New Electrode

A new grade E-6010 electrode is announced by the Metal & Thermit Corp., 100 E. 42nd St., New York 17, N. Y. The Murex Type R electrode is said to have a small amount of spatter, uniformity of arc behavior, and lack of spearing. It takes high currents without coating breakdown or change of performance as the electrode is consumed.

For further information write to the company, or use the Request Card at page 18. Circle No. 799.

Wrench Head Rotates To Adjust Jaw Opening

The head of a new open-end wrench rotates so that jaws open or close depending on the direction of turn. Accordingly, the harder the wrench is turned the tighter it grips. The Plattina self-adjusting wrench



will handle a nut from ¼ to 1¼ inches. In tight places a ratchet-like action slips the knurled jaws for a new grip.

The wrench, which is made of chrome vanadium steel, is manufactured near Solingen, Western Germany, and is being introduced here by Fuller & Hellman, Inc., Moro, Oreg.

For further information write to the company, or use the Request Card at page 18. Circle No. 803.

Offer Dozers, Scrapers, Line of Attachments

Dozers, scrapers, rippers, winches, and cable power control units are among items in a new line of construction machinery offered by the Road & Track Equipment Division of Pullman-Standard Car Mfg. Co., 79 E. Adams St., Chicago 3, Ill. The equipment is used with International crawler-type tractors of various sizes.

Dozers are made with straight or angle blade and with cable or hydraulic control. Single-drum front and double-drum rear-powered cable control units are available. The low-mounted straight blade tilts 12 inches. A clearing blade can be substituted for it by removing six pins. The angle blade turns 25 degrees and tilts 7 inches.

The company makes scrapers in a variety of sizes. All models have a high-lifting apron and long low bowl. Gooseneck design is said to permit nonstop turns within the scraper's own length.

The rippers penetrate from 24 to 30 inches deep in cuts from 6 feet to 7 feet 5 inches. Digging depth and clearance of teeth are controlled from the driver's seat.

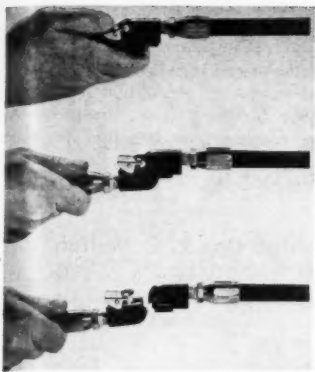
Winches that mount without adapters are said to provide up to 100 per cent more pull than the drawbar pull of the tractor. Brake holding power increases automatically as the load increases. On some models a swivel coupler and lock are optional.

For further information write to the company, or use the Request Card at page 18. Circle No. 710.

Weiss for Mellon-Stuart

Warren H. Weiss recently resigned as Chief Engineer of Ragnor Benson, Inc., Pittsburgh, Pa., to accept the position of Vice President of Mellon-Stuart Co., Pittsburgh, Pa., contracting-engineering firm. He is a member of the Pennsylvania Society of Professional Engineers.

CONTRACTORS AND ENGINEERS



Fluid carrying lines equipped with the Aeroquip slide-seal coupling can be disconnected as shown above.

Hose Coupling Unlocks When Lever Is Pressed

A new 2-piece coupling that disconnects fluid-carrying lines when a lock lever is pressed is announced by the Aeroquip Corp., 303 S. East Ave., Jackson, Mich.

The Slide Seal coupling consists of two aluminum assemblies with rubber "O" rings. The spring-actuated locking device holds each half of the coupling in the coupled position, which permits full flow of fluids. After pressing the lock lever, pulling separates the coupling halves. When disconnected, each half of the coupling forms a seal. The couplings may be used with hydraulics, water, hot oils, crude and fuel oils, anti-freeze solutions, gasoline, diesel fuels, and air.

For further information write to the company, or use the Request Card at page 18. Circle No. 808.

Pennsylvania Turnpike: Improved Safety Figures

Last year the percentage of fatalities on the Pennsylvania Turnpike was the second lowest since the opening of the 327-mile toll road in 1940, and the percentage of injuries was the lowest since 1947. In accordance with the requirements of the National Safety Council, the Turnpike Commission has compiled two separate reports showing the accident experience over the years on the turnpike system.

The death rate per 100,000,000 vehicle miles—the standard of measurement of the National Safety Council—was 7.3 in 1952 compared with 8.5 in 1951. The fatality rate was lowest in 1947, when it was 5.8. The 1952 injury figures shows a percentage of 0.103 per 100,000,000 vehicle miles.

In spite of these improved figures, the Commission cut the speed limit on the Turnpike recently as the accident rates are still above the national average.

Booklet on Arc Welding

A new 40-page booklet from Hobart Bros., Troy, Ohio, shows how arc welding is used in construction and related industries. Welding is also shown in heating, piping, and sheet-metal work, on truck bodies and trailers and on stainless-steel work.

The Hobart line of arc welders, electrodes, and accessories is described in later pages.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 822.

Styrene Plastic Pipe

A line of styrene plastic pipe in sizes ranging from 1/2 inch to 6 inches OD is made by the Atlas Mineral Products Co., 42 Walnut St., Mertz-town, Pa. Threaded fittings are available in sizes up to 2 inches.

Ampcolite pipe comes in 10 and 20-foot lengths. It is said to be impact-resistant and to withstand corrosives.

For further information write to the company, or use the Request Card at page 18. Circle No. 796.

Line of Rollers Described

Literature is available on a line of rollers made by the Shovel Supply Co., P. O. Box 1369, Dallas 1, Texas. The company offers two maintenance rollers and a 3 to 5-ton tandem roller.

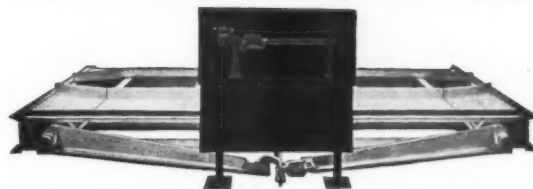
Data may also be obtained on a

variety of double-drum tamping rollers and a sand-ballast pneumatic roller. On the tamping rollers the number of feet per drum may be

varied to suit specifications.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 780.

WINSLOW—PORTABLE TRUCK SCALE "THE CONTRACTORS' SPECIAL SCALE"



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacities: 15-18-20-30 tons.

Write us for name of your nearest distributor.

WINSLOW SCALE COMPANY
P. O. Box 1198 Terre Haute, Indiana

GULF PRODUCTS and FINE SERVICE

*keep equipment rolling on
Pittsburgh Parkway Project*



Dinardo, Inc., Pittsburgh, Pa. has the contract from the Pennsylvania Department of Highways for construction of the Saw Mill Run Interchange on the Penn-Lincoln Parkway West. The job involves moving 750,000 cu. yds. of earth and building 6 structures. This is one of several important Dinardo contracts in connection with Pittsburgh's huge Penn-Lincoln Parkway project.

It's a speedier, more profitable job when equipment performs smoothly and dependably. And the use of quality petroleum products is one of the surest guarantees of this kind of performance.

That's why so many contractors on the big, tough jobs specify Gulf lubricants and motor fuels. They have found that Gulf lubricants provide an extra margin of protection against mechanical delays . . . that Gulf fuels deliver full power . . . and they appreciate Gulf's prompt delivery service.

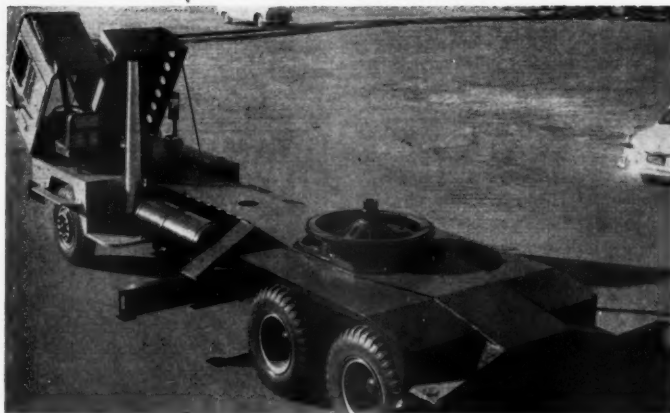
Let us discuss with you how Gulf Quality Petroleum Products can help you on your next job. Write, wire, or phone your nearest Gulf office.



Crane Carriers

Crane carriers in capacities of 5 tons and up are made by Cook Bros. Equipment Co., Crane Carrier Division, 1815 N. Broadway, Los Angeles 31, Calif. The units mount cranes, shovels, draglines, and trench hoes. They are powered by gasoline or diesel engines with a choice of makes and types.

A feature of the unit is the accessibility of the engines for maintenance. Both the engine hood and the operator's cab lift on front hinges. The doorstep folds out of the way when not in use. The rigging and tackle box acts as a walk



and step.

The unit has guarded sealed beam lights set in diamond-plate fenders. Stationary outriggers with or without extensions are optional.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 782.

Lehigh Ups R. L. Mullen

R. Leslie Mullen, Vice President of Lehigh Structural Steel Co. and its subsidiaries since 1951, has taken over the post of Assistant to the President. Thomas R. Mullen is President and General Manager.

DISTRIBUTORS

ALABAMA—Tractor & Equipment Co., Inc., 4401 First Ave. N., Birmingham 1. Ray-Brown Machinery Co., 225 W. Fairview Ave., Montgomery; P. O. Box 357, Mobile.

ALASKA—Philpott Equipment Co., 573 Dexter Rd., Ton 210, Seattle 4, Washington.

ARIZONA—Lively Equipment Co., Albuquerque, N. M. State Tractor & Equipment Co., 407 S. 17th Ave., Phoenix.

ARKANSAS—Euclid-Memphis Sales, Inc., Memphis 2.

CALIFORNIA—Geo. M. Philpott Co., Inc., Emeryville; 330 W. Maple St., Monterey.

CANADA—Dietrich Collins Equipment Ltd., 600 S. W. Marine Dr., Vancouver 14, B. C.

FERGUSON Supply Alberta Ltd., Calgary, Edmonton and Lethbridge, Alberta.

G. H. Goddard Equipment Ltd., 28 Jones Ave., Toronto; P. O. Box 187, Port Arthur, Ontario; P. O. Box 89 NDB, Montreal, Que.

Maritime Newfoundland Agencies Ltd., P. O. Box 822, Halifax, N. S.

COLORADO—Constructors Equipment Co., 370 Downing St., Denver 5.

CONNECTICUT—The W. I. Clark Co., 2195 Bristol Ave., New Haven.

DELAWARE—L. B. Smith, Inc., Camp Hill, Penna.

FLORIDA—Florida-Georgia Tractor Co., 2808 N. Beaver St., Jacksonville; 2419 State St., Tallahassee; 3138 No. Miami Ave., Miami; 1401 E. Orange Blossom Trail, Orlando; New Quincy Highway, Tallahassee; 218 S. 12th St., Tampa.

GEORGIA—Tri-State, Inc., 850 Glenwood Ave. S.E., Atlanta 1; East Side Highway, Macon; Elm St., Augusta; 712-14 No. Washington St., Albany.

HAWAII—Grace Brothers, Ltd., 770 Ala Moana Road, Honolulu 10, Hawaii.

IDaho—Intermountain Equipment Co., Broadway & Myrtle St., Boise; 210 No. 4th St., Pocatello.

ILLINOIS—Euclid-Chicago Co., 8027 Northwest Highway, Chicago 31.

Euclid Sales & Service, Inc., St. Louis 10, Mo.

INDIANA—Euclid-Chicago Co., Chicago 31, Illinois. Reid-Holcomb Co., 1815 Kentucky Ave., Indianapolis 21.

IOWA—Herman M. Brown Co., Des Moines, Cedar Rapids and Sioux City.

Fehrs Tractor & Equipment Co., Omaha 2, Neb.

KANSAS—The G. W. Van Keppel Co., Kansas City 5, Mo.

KENTUCKY—Euclid-Kentucky, Inc., 3900 Crittenton Drive, Louisville.

LOUISIANA—Euclid-Memphis Sales, Inc., Memphis 1.

MAINE—M. A. Burkhitt, Inc., Route 1, R.F.D. 1, South Portland.

MARYLAND—Rich Equipment Co., Clarksville, W. Va. L. B. Smith, Inc., Camp Hill, Penna.

MASSACHUSETTS—Clark-Wilcox Co., 118 Western Ave., Boston 34.

The W. I. Clark Co., New Haven, Connecticut.

MICHIGAN—W. H. Anderson Co., Inc., 47 West Seven Mile Rd., Detroit 3.

The Euclid Road Machinery Co., Hibbing, Minn.

MINNESOTA—The Euclid Road Machinery Co., Highway 100 West, Hibbing.

MISSISSIPPI—Euclid-Memphis Sales, Inc., Memphis 1.

MISSOURI—Euclid Sales & Service, Inc., 6231 Manchester Ave., St. Louis 10.

The G. W. Van Keppel Co., 2461 Pennway, Kansas City 8.

MONTANA—Hall-Ferry Machinery Co., P. O. Box 1367, Butte.

NEBRASKA—Constructors Equipment Co., Denver 1. Fehrs Tractor & Equipment Co., 1809-11 Cumis St., Omaha 2.

NEVADA—Geo. M. Philpott Co., Emeryville; Monterey, California.

Fouger Equipment Co., Salt Lake City 6, Utah.

NEW HAMPSHIRE—Clark-Wilcox Co., Boston 34, Mass.

Hubbard & Floyd, Inc., New York 51, N. Y.

NEW MEXICO—Lively Equipment Co., 2601 J. Fourth St., Albuquerque.

NEW YORK—Hubbard & Floyd, Inc., 151st St. & Gerard Ave., New York 81.

T. E. Rette Equipment Co., 2260 Sheridan St., Buffalo.

L. B. Smith, Inc., 357 W. Fayette St., Syracuse 2; 134 State St., Albany.

NORTH CAROLINA—Mammoth Roads Tractor & Equipment Co., Norfolk, Virginia.

North Carolina Equipment Co., P. O. Box 885, Greenville; P. O. Box 1205, Charlotte; Santee Creek Rd., Asheville; P. O. Box 122, Guilford; P. O. Box 695, Wilmington.

NORTH DAKOTA—The Euclid Road Machinery Co., Hibbing, Minnesota.

OHIO—The W. W. Williams Co., 835 Goodale Blvd., Columbus 8; 18301 Brookpark Rd., Cleveland 12; 514 Main St., Cincinnati 2; 1260 Cent St., Toledo (Maumee).

OKLAHOMA—Butler-Sparks Equipment Company, Oklahoma City and Tulsa.

OREGON—Intermountain Equipment Co., Boise, Idaho. P. L. Crooks & Co., 2145 N.W. Pettygrove St., Portland.

PENNSYLVANIA—Atlas Equipment Corp., 635 5th Ave., Pittsburgh 13.

Standard Equipment Co., 152 Norton St., Wilkes-Barre; Hoburn & Lycoming Sts., Williamsport; L. B. Smith, Inc., Camp Hill; Harrisburg; 290 & Montgomery Avenue, Philadelphia.

RHODE ISLAND—Clark-Wilcox Co., Boston 34, Mass.

SOUTH CAROLINA—Southern Equipment Sales Co., Sumter Highway, Columbia.

SOUTH DAKOTA—The Euclid Road Machinery Co., Hibbing, Minnesota.

TENNESSEE—Euclid-Memphis Sales, Inc., 169 S. Butler Ave., Memphis 2.

Power Equipment Co., 1218 Island Home Ave., Knoxville; 805 W. Manning St., Chattanooga; 121 Clay St., Knoxville.

TEXAS—The Euclid Road Machinery Co., 1007 Loop St., Dallas 2.

Lively Equipment Co., P. O. Box 1430, El Paso.

UTAH—Fouger Equipment Co., 1361 So. 2nd West, Salt Lake City 6.

VERMONT—Clark-Wilcox Co., Boston 34, Mass.

VIRGINIA—Mammoth Roads Tractor & Equipment Co., W. 39th and Kilham Ave., Norfolk.

Rish Equipment Co., 1601 Chamberlayne Ave., Richmond 10; 408 Center Ave., N.W., Raleigh 2.

WASHINGTON—Philpott Equipment Co., 573 Dexter Horton Building, Seattle 4, Washington.

F. L. Crooks & Co., Portland, Oregon.

Intermountain Equipment Co., E. 631 Sprague Ave., Spokane 5.

WEST VIRGINIA—Atlas Equipment Corp., Pittsburgh.

Rich Equipment Co., Kanawha Blvd., Charleston 22; East on U.S. 80, Clarksville; P. O. Box 189, Bluefield.

L. B. Smith, Inc., Philadelphia, Penna.

WISCONSIN—Cunningham-Ortmeyer Company, 80 Machine 44, Eau Claire and Green Bay.

WYOMING—Constructors Equipment Co., Denver 1. Fehrs Tractor & Equipment Co., Salt Lake City 6, Utah.

high production on Turner Turnpike with...



★ "Eucls" on the Turner Turnpike averaged over 13 m.p.h. for the loaded haul. Top speed of 28.2 m.p.h. with full payload means more trips per hour.

Euclid SCRAPERS

On a section of the new Turner Turnpike between Tulsa and Oklahoma City, Amis Construction Co. had a really tough job for scrapers—hard clay and sand rock.

Despite the difficult digging, three "Eucls" of 15.5 cu. yd. struck capacity averaged 375 bank yards per hour on a round trip of 3,020 feet, enabling the contractor to complete this work ahead of schedule.

Easy loading, high travel speed, and fast dumping here proved what contractors have learned on many other earth moving projects—that for day-in and day-out performance you can't beat Euclid Scrapers.

Your Euclid distributor may be able to show you how Euclid equipment can step up production and lower costs on off-the-high-way moving of earth, ore, rock and coal. Have him show you performance figures on work similar to yours.



★ Positive, fast acting hydraulic controls permit spreading the load in thin, even layers. Roll-out ejector dumps all types of material fast and clean.

The EUCLID ROAD MACHINERY CO., CLEVELAND 17, OHIO



Lining for Tunnel Is Quickly Placed

Winston Crews Progressed 80 Feet Per Day as They Labored Round the Clock to Finish Bald Mountain Tunnel

• WITH a lining crew of less than 70 men, Winston Bros. Co. of Monrovia, Calif., made an 80-foot lining pour 6 days a week to hurry its \$1,691,262 contract to completion for the excavation and lining of Bald Mountain Tunnel, near Loveland, Colo. The 6,750-foot 10½-foot-diameter finished pressure tube is a part of the Colorado-Big Thompson delivery system on the east slope of the Rockies, and was built for the U. S. Bureau of Reclamation.

Despite hot weather, a hot tunnel, hot water, and hot cement, all the concrete-placing problems were whipped and the work proceeded rapidly. It was started on March 19, 1951, holed through on November 3 the same year, and completed by November 1, 1952.

Design and Purpose

Bald Mountain Tunnel is one of several such bores. It brings Colorado River water down the east slope of the Rocky Mountains for hydroelectric milking and eventual use as a supplemental irrigation supply on farmlands on the eastern slope. It is a pressure conduit, dropping the water from elevation 6,541.32 to 6,513.17 in its length, after which the water makes a sharp 1,059-foot drop into the Flatiron power plant. Details of the Colorado-Big Thompson system have been carried in previous issues of CONTRACTORS AND ENGINEERS, but in general the purpose of the big project is to bring water from the Colorado under the Rockies through the 13-mile Adams tunnel and take its hydroelectric energy as the water drops down the east slope toward the thirsty acres.

The tunnel was excavated to a predicted diameter of 11½ feet, and the concrete lining is 1-foot thick and heavily reinforced. Actually, the tunnel was excavated with an over-break of 14 per cent, making the concrete run about 49 per cent over the estimate as lining was done. Winston's project included only the tunnel drilling and lining, and construction of a surge chamber 50 feet in diameter by 83 feet deep. This big tank, cut in solid rock, is close to the east portal of the tunnel. Some pressure grouting is also being done to seal off the rock behind the lining.

Messy Cleanup Job

Bald Mountain Tunnel passed through considerable dirty and unstable ground, so in addition to the necessity for using great quantities of steel supports during and after excavation, the tunnel cleanup was one of the most troublesome phases of the work. In spite of a preliminary cleanup last spring, followed by the placing of a sub-invert in the worst places, it remained a tough job.

Cleanup was centered on the graveyard shift, when everything else could be cleared out of the way,

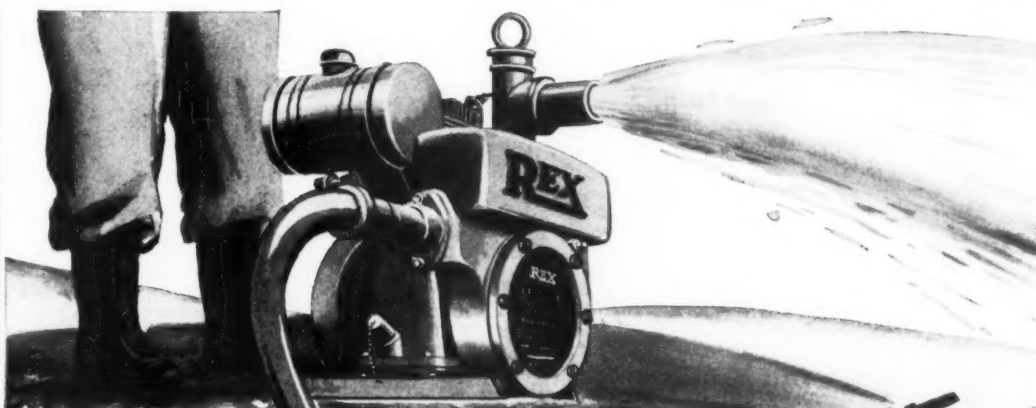
and the 15-man crew charged with that part of the operation had to prepare 80 feet—actually 90, to make room for the forms—if they could. The mud and dirt on the tunnel floor was first cleaned up by hand and loaded into one or two mine cars, which were snaked out by a small G-E locomotive. Air and water jets were used also, and in many cases

(Continued on next page)



Three Flocrete pneumatic concrete placers take on concrete from the paver setup just outside the tunnel portal.

Ray Day Photo



**PUMP'S FINE TODAY... BUT
HOW ABOUT TOMORROW?**

With Rex and only Rex

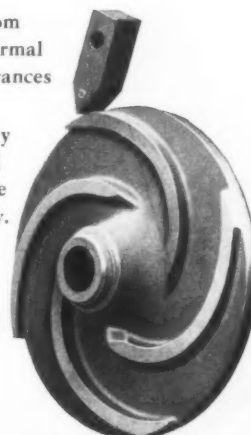
**You're assured new pump efficiency
for the lifetime of the pump because...**

ONLY REX HAS THE ADJUSTABLE AIR PEELER!

Every self-priming, centrifugal pump must have an air peeler to remove air from the suction line and create the vacuum that draws water up to the impeller. Normal wear on the peeler and fast-moving impeller destroys the necessary close clearances between these parts... reducing both priming and pumping efficiency.

Here's where Rex alone can maintain original priming and pumping efficiency for life. A simple adjustment of the exclusive Patented Adjustable Air Peeler and you've restored its original close clearance with the impeller. Just a twist of the wrist and you've restored new pump efficiency... for today... and tomorrow.

Get all the details on this and other
exclusive Rex features from your local
Rex distributor or write to Chain Belt Company,
4666 W. Greenfield Ave., Milwaukee 1, Wis.



CONSTRUCTION MACHINERY

Lining for Tunnel Is Quickly Placed

(Continued from preceding page)

the small mud-filled depressions had to be cleaned out by hand, using small tools and buckets. The job was a mean one, requiring many man-hours of labor, but there seemed no other way to expose clean rock for the bond between the lining and the Bald Mountain rock.

If for some reason cleanup work was unusually tough, it took more than a shift to prepare a section. In that case, the cleanup work was finished out the following day with extra men brought in for the purpose.

Forms, Steel Set on Day Shift

The day shift usually saw at least two and sometimes three operations. Reinforcing steel was set on the day shift, and the 80-foot form was stripped and moved ahead, blocked, the bulkhead made, and everything checked out for the pour. This operation went along so close to schedule that the log book was almost monotonous, showing the start of concreting at 4:30 p.m. or thereabouts.

Reinforcing steel consisted of lapped segments of 1-inch steel bars which formed the ring steel, followed by longitudinal bars set around the cage. Ogden Construction Co. of Denver had a subcontract for this part of the work, and the steel was



Bald Mountain Tunnel now drops water into this big power penstock, shown here under construction by another contract.

Ray Day Photo

furnished by KC Supply Co. The men who tied the steel bent their

"pigtails" down to minimize puncture wounds for other men who had

to work on the forms and vibrate concrete around these protrusions. Such a simple thing as a protruding wire pigtail cost the loss of a man's eye on another Big Thompson contract.

After the steel was set, the main job was to move the steel form ahead and set it up for the next pour. The form consisted of 20-foot segments of structural ribs, covered by a 1/4-inch steel-plate facing. The ribs were designed by Robert S. Mayo, a structural engineer of Lancaster, Pa., manufactured in the east, and shipped to Colorado.

The forms consisted of a bottom section, curved to fit the invert, which could be set down on solid footing. This section also carried a narrow-gauge railroad track to pass the main jumbo. The other section of the form finished out the tunnel perimeter, having folding wings which tied in to both sides of the base form, and a collapsible construction at the top. The wings were raised by hand hoists, and the form collapsed and extended by means of hand jacks. When the form was collapsed, it rode along to its next location on its jumbo. When the form was set in place with all the jacks tight, the jumbo acted as its main support during the pour. In spite of the fact that all jacks and hoists were operated by hand, the form was most effective and easy to set up. A crew of 13 men could pick it up and move it easily in a shift.

ANOTHER BONDACTOR APPLICATION



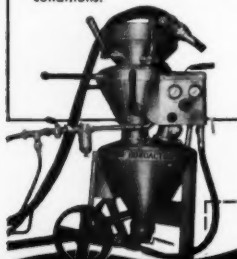
There's A BONDACTOR That's Right For Your Needs

Model 750. Capacity: 1/2-3/4 cu. yd. per hr. Operates with 75 or 105 CFM compressor.

Model 1250-S. Capacity: 3/4-1 1/2 cu. yds. per hr. Operates with 105 CFM compressor.

Model 1250-L. Capacity: 1 1/2-3 cu. yds. per hr. Operates with 210 CFM compressor.

* Capacities vary with material being gunned and with specific operating conditions.



AIR PLACEMENT EQUIPMENT COMPANY

1005 West 24th Street
Kansas City 8, Missouri

Inside walls of a Philadelphia Church being completely waterproofed with the BONDACTOR. Plaster was then applied in the usual manner.

Faster, Less Costly Wall Waterproofing with a BONDACTOR

Gun your own concrete, refractories and other cementitious materials with a BONDACTOR. You'll save time, you'll save labor, and you'll keep the profits. A few of the many jobs that will keep your BONDACTOR busy the year around are: steel encasement for fireproofing and insulation, bunker, hopper and stack lining, pipe grouting and many types of repair and maintenance. Using a special nozzle, the BONDACTOR is also an efficient wet or dry sandblasting machine.

Mail Coupon Today For Free Literature

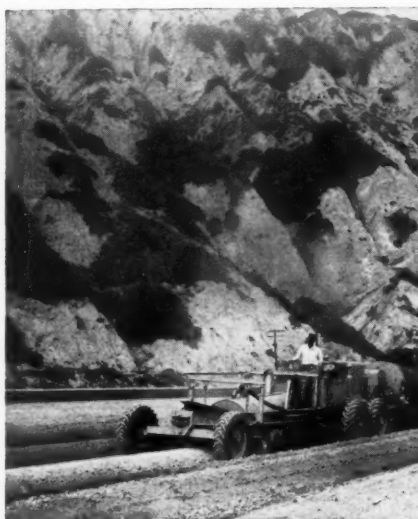
I am considering using the BONDACTOR for _____ using _____ materials.

Name _____

Firm _____

Address _____

City _____ Zone _____ State _____



with a WOOD Roadmixer

Give your taxpayers the finest roads that money can buy with a Wood Roadmixer—at savings up to one-third over methods you are now using. Give the taxpayer just that many more miles of road for his dollar. And we have the facts to prove it!

The Model 42 Wood Roadmixer, shown above, is a complete traveling mixing plant. It mixes in one pass all types of soils or aggregates—native or imported—with any kind of liquid binder used in mix-in-place pavement construction. It is one-man operated and produces up to 200 tons of ready-to-spread mix per hour. It is self-propelled. It requires no heavy transport equipment to move from job to job.

Also available the Model 54 for the big jobs—the Model 36 for the small jobs.

For job record facts on Wood Roadmixers and other Wood Roadbuilding equipment, see your Wood distributor or write us direct.

Box 620 • 6900 Tujunga Ave.
North Hollywood, California

WOOD MANUFACTURING CO.

Export Offices: 3938 Wilshire Blvd. • Los Angeles 5, Calif. •

Cable Address: Woodor

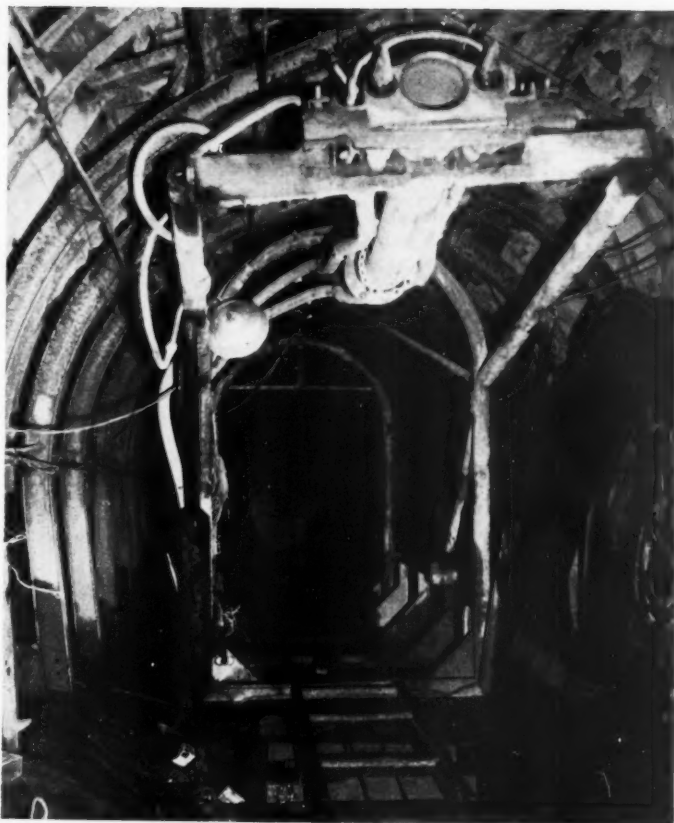
CONTRACTORS AND ENGINEERS

The form was equipped with drilled holes in the center of the bottom panel, which furnished the inspectors a visual guide that concrete reached all the way under the invert form. In addition, the structural members were equipped so that Ingersoll-Rand pneumatic vibrators could be fastened on for a few seconds' consolidation during the pour. Several small Ingersoll-Rand stinger-type internal vibrators worked through doors in the forms.

Concrete Placing

A Flocrete pneumatic concrete placer was used in lining the tunnel. This placer is essentially new to tunnel builders, and, according to Construction Engineer George Highley, the method fully meets the Bureau of Reclamation's requirements. With it, concrete is forced through a slick line to its point of placement in the pour, using air rather than piston pressure. The slick line is buried at least 5 feet in the concrete at all times so the material will be delivered steadily and without segregation. The placer is unique in that it is not a modification of any standard unit. It is designed for use in limited clearances, and to fit within the dimensions of most tunnel jobs. Its 2-yard body is only 60 inches high, and has no side projections.

On the Bald Mountain Tunnel job, the placer operated on compressed air at pressures of 90 to 100 psi, piped in from a Gardner-Denver 50-cfm portable compressor. An 8-inch



This concrete pumping arrangement leads from the Flocrete placer. Concrete comes into the tunnel via railroad cars and the narrow-gauge track in the foreground.

Bureau of Reclamation Photo

air line ran from the compressor to a 2-inch rubber-hose connection on

the placer. A patented valve arrangement permitted the operator to

control the concrete discharge to suit varying conditions within the forms.

However, at the first pour, the concrete, which had arrived on the job with a 6-inch slump, was found to have stiffened up to 2½ inches—much too stiff for pipeline placement. This problem was solved by draining the hot water from the pump and delivery lines leading to a water tank above the work, involving about 7,000 feet of 6-inch line, and maintaining these lines at the same average 70-degree temperature as the reservoir constant. In addition, the hot placers were cooled off from the sun by bringing them inside the tunnel on the day shift where they would be shielded from the sun. These precautions brought the slump at point of placement down to 4½ inches, which was enough to allow the concrete to settle around the steel and make a dense mass.

At all times the concrete was permitted to assume its normal angle of repose under both internal and external vibration, and the pours were not "forced." Not until a goodly part of the concrete in a pour had been placed was the slick line moved. Then it was carefully withdrawn by an air tugger, as the concrete continued to build up around the tube section.

Because of several other Winston contracts in the vicinity, a central Conveyco concrete batch plant was set up in the Flatiron Powder Plant area, about 4 miles downhill from

(Concluded on next page)

EVERY USER OF BOOM MACHINES...

...NEEDS A SAUERMAN Scraper!

A Saureman Crescent Scraper will repay its moderate-initial cost many times over when added to your boom machine as auxiliary equipment. Simple to rig up, it increases the machine's capacity when used on specific job operations mentioned below.

For backfilling, grading and other jobs where material must be moved but not lifted, the scraper is simply cast from the boom tip. The Crescent bites into and gathers the load with the ease of a plowshare, then hauls at ground level and deposits the load automatically when the scraper is raised by the boom line. Machine strain and power consumption required to lift and swing the load to the discharge point are eliminated.

To dig material from a river, deep pit or soft area beyond the reach of the boom, another method is used to rig the Crescent Scraper to the boom machine. For such work the Crescent is suspended by chains from a simple trolley that rides on a track cable extending from the tip of the boom to an anchorage across the river. Thus, it is able to excavate far beyond the reach of the boom and haul material onto the bank.

Any boom machine will handle a Crescent of larger size than its regular dragline and clamshell bucket. The Crescent is much lighter, size for size, than these buckets. Digging power and strength are derived from the Crescent's bottomless construction and flowing lines—not from weight of metal. Users of boom machines can obtain full information by writing for illustrated literature describing how other operators use Saureman Crescent Scrapers on their machines to increase output and reduce costs.

SAUERMAN BROS., Inc.
564 SOUTH CLINTON ST., CHICAGO 7, ILLINOIS

Cableway
and Scraper
Specialists
Since 1909

APRIL, 1953

digs **300**
belled caissons

two
per
hour



USING CALWELD EARTH DRILLS, a contractor completed 300 belled caissons for the building foundation of the new Bret Harte School in San Francisco—boring one every thirty minutes! This is just another example of speeded up production accomplished by contractors through using Calweld *Bucket Type Earth Drills*. Built in 3 models, they bore up to 84" diameter holes to a depth of 200 feet. Eliminate costly hand labor and danger of men having to work underground. Every operation of Calweld Earth Drills is mechanically performed. Interchangeable buckets permit boring in every soil condition. All controls are centered in single unit for easy operation. Built on skid frames for mounting on any truck from 1 to 2-ton or larger.

Write today for complete information.

CALIFORNIA WELDING & BLACKSMITH SHOP, INC.
7222 East Slauson Avenue, Los Angeles 22, California
EXPORT OFFICE: 50 Church Street, New York 7, N. Y.

CALWELD EARTH DRILLS

Lining for Tunnel Is Quickly Placed

(Continued from preceding page)

the tunnel portal. Concrete requirements from this plant were such that it worked much better to deliver tunnel concrete on the swing shift. The material was dry-batched to a fleet of 10 batch trucks, hauling 2 and 4 batches to the load. The trucks delivered the material to a Ransome 34-E paver skip just outside the tunnel.

When a batch of concrete was mixed, it was discharged to a Flocrete placer. There were six such placers on the job, and they were handled in trains of two each. Some excellent pouring records were made. The pours contained 158 pay yards, with a 49 per cent overrun because of excavation overbreak, but the system accounted for about 39 cubic yards of concrete in place per hour. Rates of placement as high as 42 cubic yards an hour were set.

The forms were stripped the next day after they were filled, and the fresh concrete was then sprinkled with water. When the beads began to disappear, the surface was protected by an application of paraffin membrane-curing compound.

Grouting was no serious problem. A rubber-tube fitting which could be wedged in the hole by twisting a wing nut on top was used. The limit taken by one grout hole was 277 sacks of cement, but the other holes took considerably less slurry.

Personnel

Winston Bros. Co.'s operations were under the general supervision of Fred Peterson, Project Manager, with Frank R. Merrick as General Superintendent and Paul Haldaman as Assistant Superintendent. Joe Duda was Foreman on finishing. His crew worked swing shift while they poured. Shifters in the tunnel included Jiggs Jamison, form setting; Pierre Wamboldt, concrete lining; Tom Clarke, graveyard cleanup; C. M. Blue, day-shift cleanup; and Newell Gapter, grout. Joe Barton was Office Manager.

The Bureau of Reclamation's field work was under the general supervision of G. R. Highley, Construction Engineer.

Goodyear Celebrates

With the celebration of its 40th anniversary, the Mechanical Goods Division of Goodyear Tire & Rubber Co., Akron, Ohio, reaches a milestone in its production record. Beginning in February, 1913, on one floor of the old main Akron, Ohio, plant, the Division, with only 150 workers, began manufacture of four products: balata belting, horseshoe pads, rubber tiling, and soles and heels.

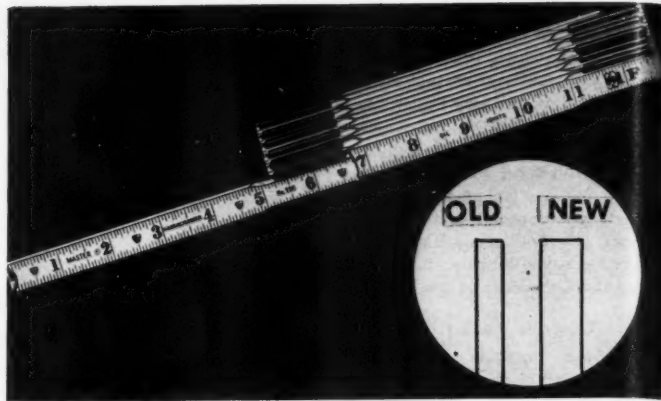
Today, operating with over 5,000 employees in the company's Plant 2 in Akron, the Division has complete plants in Lincoln, Nebr., and St. Mary's, Ohio, as well as manufacturing divisions in the Los Angeles, Calif., and New Bedford, Mass., plants. It produces 20 major categories of products, including the Goodyear conveyor belt, an example of which may be found in the system at Shasta Dam, Calif., and 400 different rubber parts for automobiles.

Astronomical Tables

The 1953 edition of "Solar Ephemeris and Polaris Tables" has been published by C. L. Berger & Sons, Inc., 37 Williams St., Boston 19, Mass. The 132-page booklet contains complete instructions, in English and Spanish, prepared by Herman J. Shea, Associate Professor of Surveying, Massachusetts Institute of Technology, for determining azimuths from the sun and the altitude of Polaris.

Directions for making astronomical observations and computing results by direct solar observation and time from the same observation; meridian by solar attachment; meridian by Polaris at elongation; azimuth by Polaris at any hour angle; latitude by sun at noon, and latitude by Polaris are included, as well as all requisite tables.

To obtain this literature write to



A Guardsman wood rule is now made 1/32 inch thicker for added strength. The rule is made by the Master Rule Mfg. Co., Inc., 40 Mulberry St., Middletown, N. Y. For further information write to the company, or use the Request Card at page 18. Circle No. 802.

the company, or use the Request Card that is bound in at page 18. Circle No. 709.

Insure your own personal security and that of the nation by regular investment in U. S. Defense Bonds.

don't let HEAT

RUIN YOUR FLYWHEELS AND PRESSURE PLATES

Install Velvetouch Matched Facing Sets

Whether you're having trouble with the master facings on your tractors or the clutches in your trucks, you'll find Velvetouch Matched Facing Sets keep equipment out of the repair shop and on the job. Because Velvetouch gives you FOUR controlled friction surfaces instead of two... gives you positive protection against heat-checked flywheels and pressure plates!

In addition, Velvetouch Matched Facing Sets insure increased clutch capacity, for they DOUBLE the controlled friction area you get with conventional plates. And with Velvetouch, you can reclaim old flywheels and pressure plates that have already been heat-damaged, and put them back into service... better than ever!

Detailed literature available now. For further facts about Velvetouch Matched Facing Sets... see your supplier, call our nearest branch, or write us direct.

THE S. K. WELLMAN CO. • 200 EGBERT RD. • BEDFORD, OHIO

THE S. K. WELLMAN CO. SALES OFFICES AND WAREHOUSES

* ATLANTA—119 14th St., N. E., Atlanta 5, Georgia	** DETROIT—16822 James Couzens Highway, Detroit 21, Mich.	* SAN FRANCISCO—424 Bryant Street, San Francisco 7, Calif.
* CHICAGO—1500 South Western Ave., Chicago 8, Illinois	* LOS ANGELES—1110 South Hope St., Los Angeles 15, Cal.	* TORONTO, ONTARIO—The S. K. Wellman Co. of Canada, Ltd., 2839 Dufferin St.
* CLEVELAND—200 Egbert Rd., Bedford, Ohio	* PHILADELPHIA—1545 West Belmont Ave., Philadelphia 41, Pa.	** WASHINGTON—1101 Vermont Ave., N. W., Washington 5, D. C.
* DALLAS—3407 Main Street, Dallas 1, Texas	* PORTLAND—636 N. W. 16th Ave., Portland 9, Oregon	

** EXPORT DEPARTMENT—8 South Michigan Ave., Chicago 3, Illinois

* SALES OFFICE AND WAREHOUSE ** SALES OFFICE



Crushing-Plant Line For Extra Mobility

A new line of single-pass portable crushing plants has been announced by Diamond Iron Works, Inc., 1748 N. Second St., Minneapolis 11, Minn. The new plants are recommended by the manufacturer for jobs where

mobility is important. The hinged conveyor does not need dismantling for towing.

Capacities range from 30 to 70 tons per hour. Each plant has a 1½-deck vibration screen and roller-bearing jaw crusher. Sizes of the jaw crushers on Models 116, 120, and 124 are, respectively, 10 x 16

STURDILITE

HEAVY DUTY FLOOD LAMPS

For Better Light—Longer Service—Lower Cost
Especially Designed for Efficient
Service on Shovels, Excavators,
Drag-Lines, Roadbuilding Equipment—
Locomotive Cranes, Tractors . . .



Rubber Mounted Base—
Standard Model

STURDILITE Heavy-Duty Flood Lamps provide specially high light intensity and spread, heavily constructed for years of trouble-free service. Hermetically sealed-beam lamp—no reflector to tarnish. Spring-mounted socket. Complete assembly mounted on rubber cushioned base to absorb vibration and shocks. Available in 6-8, 12-16, 24-28 and 110-120 voltages.

Portable STURDILITE

New model for inside or outside use. Equipped with convenient carrying handle and substantial pedestal base. Spring-mounted light socket. 4-ft. cord and connector. For all voltages. Weighs only 12 lbs.



SEND FOR ILLUSTRATED BULLETIN
Specifications, Quantity Prices

Metal Spinning Division
PHOENIX PRODUCTS COMPANY

4727 N. 27TH STREET, MILWAUKEE 16, WISCONSIN

4-Cycle Air-Cooled

KOHLER ENGINES



Power for garden tractors, mowers, pumps, sprayers, snow removal equipment, elevators and hoists, portable saws, concrete mixers, compressors, grinders, industrial and lift trucks, and a wide range of tools and equipment for industry, construction, farm and home.

Engineered and built to the quality standards that have won acceptance for Kohler Electric Plants the world over.

Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

inches, 10 x 20 inches, and 10 x 24 inches. The units have a hopper height of 10 feet 4½ inches. Adjustable single electric plate feeders provide a flow of pit run to the scalping screens and plants proper.

Optional equipment includes a sand-rejector conveyor, and front and rear dual wheels. A choice of a gasoline or diesel-power unit and mechanical or air brakes is offered.

For further information write to the company, or use the Request Card at page 18. Circle No. 769.

Folder on Corrugated Steel

A folder on corrugated-steel sheeting has been issued by Armco Drainage & Metal Products, Inc., Middletown, Ohio. It describes two types of sheeting, flange and interlocking, and shows how these can be used to control soil and water. Recommended uses include trenches,

cofferdams, shore protection, diversion dams, bridge-pier protection, and lagging for tunnels and shafts. The folder is illustrated and lists properties and weights.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 759.

Schild Bantam News

Paul Harris is the new District Manager for Schild Bantam Co., Waverly, Iowa, in its southeastern territory. This includes eastern Tennessee, North and South Carolina, Alabama, Georgia, and Florida.

For the past 14 years, Mr. Harris has been closely associated with users of all kinds of construction machinery. Until recently he was in Texas as Sales Representative and Explosives Engineer for a large power company. He will make his headquarters in Atlanta, Ga.

"Plus" Payloads for GREATER HAULING PROFITS



Photo: Courtesy of Ralph Myers
Construction Co., Bloomington,
Indiana.

...with ROGERS TRAILERS

The job of hauling this 32-ton Electric Precipitator from Cressona, Pa., to Pottsville, Pa., was taken in easy stride by the Moore-Fletcher Hauling Co., Pittsburgh, Pa., with their specialized knowledge and their rugged Rogers Trailer.



Hauling "Plus" Payloads without overloading is not only a possibility, but a relatively common practice by enterprising hauling contractors who rely upon the sturdy backbones of their Rogers Trailers to withstand heavy, bulky loads under strenuous operating conditions.

It's just one of the many reasons why

Rogers has been privileged to serve a larger number of "repeat order" customers since the year of 1915 when the first trailer was built.

We'll be glad to discuss your particular handling problem in terms of trailers that will best suit your needs and your pocketbook. Call, write or wire your agent TODAY.

This is the Sign of the Original
and
Genuine

**ROGERS
TRAILER**

This nameplate appears on every
ROGERS TRAILER as your assurance of the
GENUINE PRODUCT—Made Since 1915

Write
for the
LATEST
CATALOG

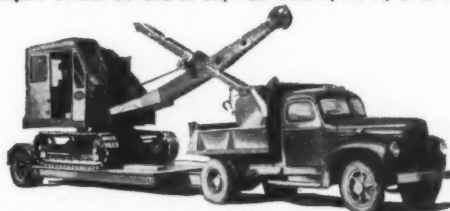
EXPERIENCE
builds em.



PERFORMANCE
sells em

ROGERS BROS. CORP.
ALBION, PENNA. CABLE: BROSIRES

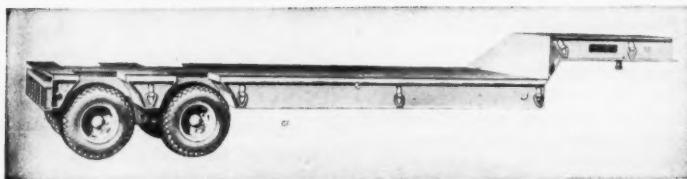
Export Office: 50 Church St., New York 7, N. Y., U. S. A.



Also of timely interest is this ROGERS Tag-A-Long trailer which makes a dump truck serve as a tractor and effects sizable savings for contractors.

SOLVE YOUR HAULING PROBLEMS WITH A "TRANSPORT TRAILER"

Capacities through 75 Ton—Semi and Full Trailers



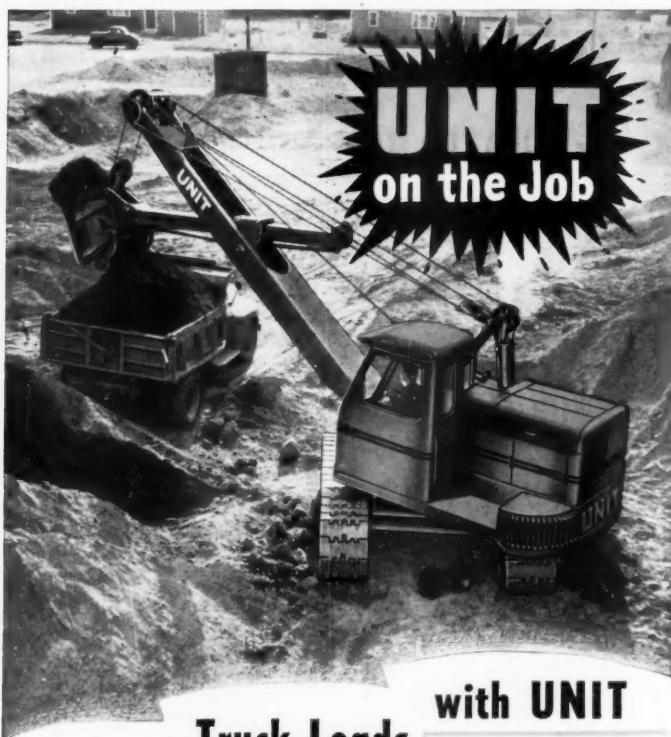
CARGO CARRIER MODEL GPX (Semi) with Tandem Axles

PATENTED TANDEM AXLE ASSEMBLY—Featuring unusual lengthwise and sidewise wheel accommodation to irregularities in the road. Use of full width tubular forged, heat treated axles with CAMBER.

FRAME—Constructed of beam sections throughout, electric welded. A ruggedly strong and efficient unit with minimum weight.

TRANSPORT TRAILERS, INC.

TRANSPORTATION ENGINEERING A SPECIALTY
CEDAR RAPIDS, IOWA, U.S.A.



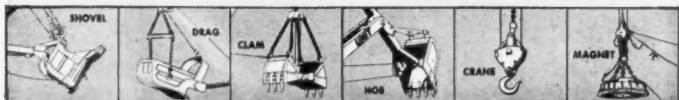
Step-up Truck Loads with UNIT

Here's a UNIT $\frac{3}{4}$ yard Shovel that's "in there swinging" . . . making big payloads. UNIT'S balanced stability and power permit hard digging . . . produce maximum yardage at low operating cost. Fewer working parts cut down replacements required . . . reduce maintenance costs. The FULL VISION CAB enables operator to see in ALL directions . . . promotes safety . . . increases efficiency. Results in more loads per day and easier load handling. Get the complete UNIT story. Write for literature.

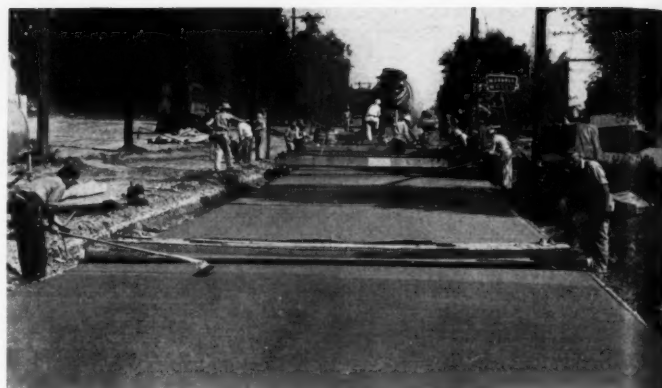
UNIT CRANE & SHOVEL CORPORATION
6309 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U.S.A.



$\frac{1}{2}$ or $\frac{3}{4}$ YARD EXCAVATORS... CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!



Looking back over the finishing operations that follow behind the truck mixer delivering the concrete on a Kansas City street-widening project.

Housch Photo

City Street Widened To Relieve Traffic Jam

Concrete for 40-Foot Pavement Was Delivered by 8-Yard Truck Mixers That Discharge Between the Forms

• EVERY traffic-way improvement in Kansas City is vitally important to its future development industrially and residentially. Construction-wise, Kansas City is scarcely able to complete a major bridge or thoroughfare before it is time to place another on the drawing boards—there are never enough streets, enough width, or enough bridges.

The recently completed widening of Wornall Road from 20 to 40 feet is important because it will relieve some of the congestion in the southern part of town.

Three-Way Cooperation

Wornall Road runs south from 43rd Street to 85th Street and the widening is taking place from 77th Street to 85th Street. This 20-foot macadam has been down, as the story goes, "since time began".

Since ingress and egress had to

be maintained for the hundreds of homes and business places, the job was much more of a problem than pouring a new roadway. Property owners, city engineers, and the contractor worked out a plan to minimize the trouble which comes with such major changes.

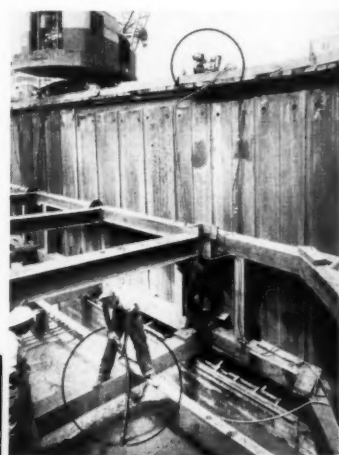
The contractor agreed to finish the job a short section at a time and decided to complete first the four blocks from 81st Street to 85th Street. One lane was done at a time, while traffic used the other half of the right-of-way, and when the pours were cured the traffic was permitted to use the completed lane while the other lane was being poured. The contractor then moved down and completed the second section by the same process.

As a further complication of the situation, there were hundreds of sewer and water lines to be cut,

The Tough Jobs-

CALL FOR

Maginniss
HI-LECTRIC



CONCRETE VIBRATORS

This is a real glutton for concrete placement jobs. The Maginniss keeps the concrete rolling fast, your operators fresh and alert, production and profits up. It is one man operated, has no flexible shafts. Electric motor is in the vibrator head.

Write and get complete information today.

Maginniss POWER TOOL CO.
MANSFIELD, OHIO

CONTRACTORS AND ENGINEERS



An 8-yard Smith truck mixer mounted on an L 210 International truck delivers 6-sack-mix concrete on the Wornall Road in Kansas City. *Houck Photo*

Cartwright Distributors
Give Greater Accuracy
 and
Greater Pay Load



Cartwright distributors, with their full circulating spray bar provide accurate starts without lap. The result of years of experience in distributor design, Cartwright distributors are now being built in the south.

• Equipment Distributor Inquiries Invited

GENERAL STEEL TANK COMPANY

P. O. Box 552 Birmingham 1, Alabama

CONTINENTAL OFFERS
"Right Now" Service
 for all your
SUCTION HOSE NEEDS



*Immediate
 delivery*

from near-the-job warehouses

Whatever your suction hose needs, you'll get prompt delivery when you call Continental. Extensive stocks of suction and other contractors' hose in a wide range of sizes are carried in the Continental Warehouses listed below.

No profit-eating delays waiting for long distance shipments. And no need to tie up your valuable working capital in large rubber goods inventories.

Next time you need suction hose, call the nearest Continental Warehouse. You'll like the service you get.

Send now for **CONTINENTAL'S** →
Special Contractors' Hose Catalog



Rubber by



**CONTINENTAL
 RUBBER WORKS**

1989 LIBERTY STREET • ERIE, PENNSYLVANIA

CONTINENTAL WAREHOUSES

BALTIMORE 1, Md. 112 West Pratt St.	CINCINNATI 2, Ohio 49 Central Ave.	LOS ANGELES 21, Cal. 2037 S. Santa Fe Ave.	PITTSBURGH 21, Pa. 607-609 Brushlan Ave.
BOSTON, Mass. 12 Franklin St. Allston 34	CLEVELAND 15, Ohio 2731 Prospect Ave.	MEMPHIS 3, Tenn. 268 Madison Ave.	SAN FRANCISCO 3, Cal. 450 Polero Ave.
BUFFALO 3, N. Y. 115 Clinton St.	DETROIT 27, Mich. 13801 Schoolcraft St.	NEW YORK 7, N. Y. 147 Chambers St.	ST. LOUIS 8, Mo. 4018 Olive St.
CHICAGO 10, Ill. 10-18 W. Hubbard St.	INDIANAPOLIS 2, Ind. 309 N. Capitol Ave.	PHILADELPHIA 6, Pa. 311 N. Randolph St.	SYRACUSE 2, N. Y. 1806 W. Genesee St.

changed, or revised. The city water department and the sewer contractor had to work in the same space, which resulted in some excavation materials being dumped on abutting property. Many of the property owners were unable to use their driveways until gravel was hauled in. The City cooperated by furnishing two sprinkler trucks to keep the dust wetted down, and it also tried to reduce the unnecessary traffic in the crowded area by keeping outside traffic out except for business purposes.

Old Paving Removed

Contract for the new street was awarded to Musselman & Hall Construction Co. by the Department of Public Works for \$190,000 and the job was started August 1, 1952.

First job was to remove the old

20-foot macadam, which was to become one 20-foot lane of the new 40-foot width. Excavation on this removal reached as much as 18 inches in establishing the new subgrade and most of it averaged more than 12 inches.

A Caterpillar heavy-duty ripper drawn by a Caterpillar D7 was used to rip up the old paving. Tough spots were cracked with a skull-cracker. The D7 had a dozer blade in front and after ripping up a section it dozed it up in piles where it would be handy for loading into dump trucks by a Caterpillar D4 Traxcavator. A 3/4-yard Lima shovel also helped load.

Most of the material was hauled away to spoil, but some of the finer material was retained for adding to the subgrade. Rough subgrade was

(Concluded on next page)

Dependable Equipment for the Construction Industry



1852

1953

for Over 100 Years

Manufacturers of Pile Driving Hammers and Pile Extractors
VULCAN IRON WORKS • 329 NORTH BELL AVENUE • CHICAGO 12, ILL.

APRIL, 1953

City Street Widened To Relieve Traffic Jam

(Continued from preceding page)

established with dozers and it was then bladed with a No. 212 Caterpillar grader.

Form Setting

Blaw-Knox steel forms were laid out for the 20-foot width with deformed marginal tie bars $\frac{1}{2}$ inch x 30 inches, spaced at 30 inches, set along the high side for the longitudinal joint in the center of the 40-foot width.

Three men and a foreman were used in driving stakes and aligning forms. The steel, of which there was more than 1,000 feet on the job, was kept about 30 feet ahead of the finisher. Steel forms were sprayed

with an oil mixture composed of part old crankcase oil and part diesel fuel.

Fine-grading was completed with a Jaeger subgrader and the surface was then rolled with a 12-ton Galion. Finished subgrades met 95 modified Proctor density specifications.

New Paving

The new paving is 40 feet wide in two 20-foot lanes, 8 inches thick with a 4-inch crown. Total length for the job is 5,100 feet.

Concrete mix was 6 sacks to the cubic yard for 3,000 pounds psi at 27 days, and was delivered to the job in 8-yard Smith truck mixers on L-210 International trucks by the Stewart Sand & Gravel Co. Trucks backed into the lane for unloading in front of the finisher. One man agitated with a Viber vibrator mounted on the finisher. Two men

with shovels kept tracks clear, checked wheels and picked up overflow outside the forms.

Following the Jaeger finisher was a Koehring hand-propelled bull float. Two men behind the bull float used hand floats with long handles. Two men followed with long-handled brooms for the finish and worked from each side or on a 4-wheel bridge. Rate of pour was 300 feet daily and the job required 6,000 cubic yards of concrete.

Curing Routine

Sisalkraft paper in 20-foot widths, and handled for re-use on 3 x 3 wood cores, was used to cover the finished concrete and left for 72 hours. No other curing was necessary.

Forms were stripped as needed after the 72-hour curing period and moved ahead.

Personnel

For the Kansas City, Mo., Department of Public Works, Reed McKinley is the Director of Public Works; John Maring, City Engineer; and J. E. Brannon, Project Engineer. For the contractor, Musselman & Hall, who used a crew of 20 men, Harold Hall was General Superintendent.

Weed-Control Chemicals

A 4-page folder on weed-control chemicals is available from Brulin & Co., Inc., 2939 Columbia Ave., Indianapolis 7, Ind. Four types of weed and brush-control products and their applications are presented: a nonselective weed killer for all types of vegetation; a selective killer for extermination of tough species such as maple, ash and oak; a dual-purpose weed control for use where there is danger of spray drift injuring adjacent vegetation; and a 2, 4-D liquid weed killer for control of a variety of weeds without injury to most types of grass.

To obtain this literature write to the company, or use the Request Card bound in at page 18. Circle No. 752.



A detachable edge wheel now available for the Rollpac 1-ton roller is said to allow the unit to work flush with walls or curbing. The edge is the same diameter as the rear roller, slips on a stub axle, and is removable when not in use. For further information write to Soilaire Industries, 1200 Second Ave., S. Minneapolis 3, Minn., or use the Request Card at page 18. Circle No. 800.

a Bigger, Better WISCONSIN
HEAVY-DUTY Air-Cooled
ENGINE
The NEW Model VG4D 25 to 36 H.P.
16% More Power For Your Equipment
Complete Power Unit with Clutch Reduction.
MORE Power TO FIT THE JOB
MORE Power TO FIT THE MACHINE

Another engineering achievement... the NEW Model VG4D V-type 4-cylinder Wisconsin Heavy-Duty Air-Cooled Engine, increasing the power range to 36 hp. — a power gain of more than 16% over the VP4D, former top engine in the line.

The NEW Model VG4D is an exceptionally smooth-running, even-firing engine. Its light weight and compactness in design simplify the problem of engine installation on modern equipment where weight and space limitations are important factors.

Every one of the traditional Wisconsin 4-cylinder features are built into this new model. These include, to name a few, tapered roller main bearings, dynamically balanced forged crankshaft, mirror finish on crank pins, Stellite-faced exhaust valves and valve seat inserts and honed cylinders for long, dependable, heavy-duty engine life. The Model VG4D engine is definitely tops in performance, delivering a maximum of power per pound of engine weight, at minimum operating and maintenance costs. We invite your request for complete detailed specifications.



WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

HEAVY-DUTY TRENCHER

WITH NEW IMPROVED SELF-CLEANING BUCKET — Capacity $\frac{1}{2}$ yd.

A heavy-duty trench digger, which is designed for a wide variety of trenching for any highlift tractor with hydraulic bucket control.

It will increase the tractor's production from 30 to 50 per cent and is easily attached by one man in 15 minutes.



The Whitestown Trencher is now available for use on the following hydraulic controlled tractors:

Allis-Chalmers HD-5G equipped with TS-5 tractor-shovel
Caterpillar D-4 and Tracton HT-4; Oliver with 4-A Lull loader
International TD-6 & TD-9 equipped with new Bucyrus-Erie dozer-shovel
International TD-6, TD-9 & TD-14-A with Hough bulldozer-shovel
Hough Model HM-Payloader; Trojan Loadster, Models LM-75; LC-100-B

• Please specify make of tractor.

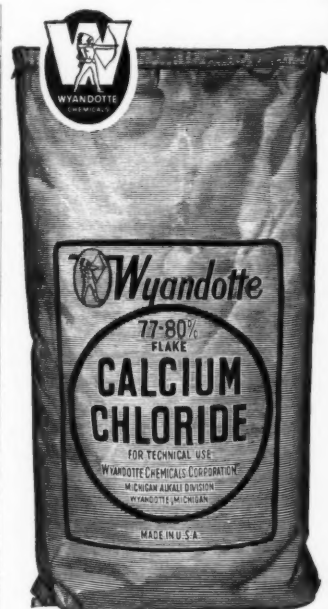
The Whitestown trencher is equipped with a $\frac{1}{2}$ -yard standard bucket. Special buckets, made to individual specifications, may be obtained. It will dig to a depth of 8 feet and dump at a height of 12 feet. This trencher has been in constant use for four years, and has proved to be rugged and satisfactory in every way.

• Immediate delivery can be made.

WHITESTOWN TRENCHER CO., INC.

Wood Road, Whitesboro, New York

Phone: Utica 6-2430



**GET STRONGER,
FASTER-SETTING CONCRETE**
with Wyandotte
CALCIUM CHLORIDE

Cuts setting time in half. Provides built-in curing in all concrete products.

Wyandotte Calcium Chloride works for you the year around:

- De-ices
- Keeps fire barrels unfrozen
- Dehumidifies air
- Dustproofs unpaved surfaces
- Provides ballast for tractor and equipment tires
- Keeps refrigeration brine fluid at low temperatures
- Prevents coal freezing

Wyandotte
CHEMICALS

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN

CONTRACTORS AND ENGINEERS



(Above) Bullhead railway lines laid on their sides one above the other, with 2 1/2-inch steel balls between them, provided the four ball races on which the 80-foot water tower progressed. (Left) A Caterpillar D7 tractor tows the tower along a specially prepared track. Block and tackle enable the 5-ton pull of the D7 to exert a pull of about 50 tons on the 1,900-ton tower.

Huge Water Tower Is Towed by Tractor

Cradle for 1,900-ton Structure Travels on Rail Track Made Of Continuous Ball Races

• THE problem of moving a 1,900-ton 80-foot-high concrete water tower a distance of 300 yards was solved recently by using a Caterpillar D7 diesel tractor to pull the structure over specially constructed track.

Located in Bedford, England, the water tower was the property of the Bedford Rural District Council, which decided that it would either have to be moved to a new location or demolished. J. L. Kier & Co., Ltd., was the contractor, and E. Ingerslev of that company supervised the work.

Mr. Ingerslev's plan was to lay a concrete-based rail track, on which to pull a cradle bearing the tower. The D7 was to be equipped with a 10 to 1 block-and-tackle reduction (Concluded on next page)

BARBER-GREENE HAS THE PORTABLE CONVEYORS YOU NEED

Here are three standard B-G Portable Conveyors together with B-G Car Unloader . . . all available for prompt delivery from your B-G distributor. These skillfully designed and ruggedly built machines will—within the limits of their capacities—provide you with the most efficient and economical

method of handling sand, stone, gravel, coal, coke, ashes, wet concrete, chemicals, bags and boxes.

In addition to the models shown, Barber-Greene also builds larger capacity portable conveyors. Why not check with your B-G distributor for complete information on portable conveyors?



MODEL 374. Heavy-duty. Pneumatic-tired—tow it anywhere. Full swiveling wheels. 18, 24 or 30-inch belt widths—33 to 60-foot lengths. Capacities to more than 425 tons per hour.



MODEL 363. Pneumatic tires and full swiveling wheels. 24-inch belt widths—25 to 35-foot lengths. Low clearance. Capacities to 200 tons per hour.



MODEL 358. Car Unloader. Perfect teammate for your B-G Conveyor. Pneumatic-tired. Capacity up to 170 tons per hour. Maximum lump size is 4 inches.



MODEL 362. Light-weight portable conveyor. Steel wheels (pneumatic-tired wheels also supplied, if desired). 18-inch belt width—25 to 30-foot lengths.

Barber-Greene

Aurora, Illinois, U. S. A.



FOUNDATION
CONSTRUCTION

CAISSONS
SHAFTS
DRILLED AND
UNDERREAMED
PIERS

SPECIAL
DRILLING
PROBLEMS

Wire or phone for a quotation
on your next foundation job—
ANYWHERE IN THE WORLD

McKINNEY
DRILLING COMPANY

NACOGDOCHES, TEXAS
Phone: 1195-1053 • P. O. Box 190

Huge Water Tower Is Towed by Tractor

(Continued from preceding page)

which would enable the tractor's 5-ton pull to exert a 50-ton pull. The estimated cost of this scheme was about half as much as that of building another tower at a new location.

Track-and-Cradle Arrangement

The track consisted of continuous ball races made up of ordinary bull-head-section railway lines laid on their sides one above the other. Between them were the bearings—about 800 steel balls 2½ inches in diameter.

The ball races were arranged in pairs, each pair supported by a line of precast-concrete blocks 6 feet

wide at the bottom and 2 feet wide at the top. These blocks spread the load over the full width of two concrete roads leading from one tower to the new site. The roads consisted of 4-inch concrete on a hard-core base rolled into the clay subsoil, which had been previously cleared and leveled by the Caterpillar D7 tractor and dozer.

The first section of the track was built up around and through the base of the tower, the 2-foot concrete walls being cut to allow the rails to pass through. A concrete cradle, made of a series of prestressed-concrete 6 x 2-foot beams, carried the tower as it was hauled along the track. Where these beams went through the tower structure, only holes for the prestressed cable were bored through, so that the tower formed part of the cradle.

When the cradle was finished and lying snugly on the track, eight of the tower's twelve supporting columns and the panel walls were cut away by blasting, leaving the tower supported by only four columns. These were then gradually cut away until the tower settled on the track.

Towed 50 Feet in Each Haul

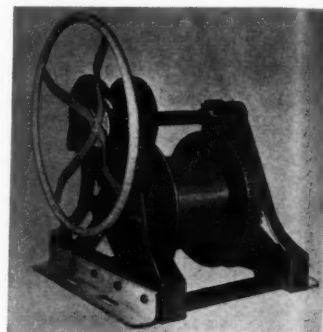
In towing the tower, the D7 pulled through the block and tackle so that for each 10 feet the tower moved one foot. The track was arranged so that the tower could be moved about 50 feet in one haul. Then the D7 was unhitched, and, by means of a hoist attachment, picked up the rear blocks and laid them in their new position in front of the tower and replaced the track and ball races.

Working continuously in good and

bad weather, the tower was over its new foundation 4 weeks after it had been moved from its former site.

Barge Connector Winch

A new 15-ton heavy-duty barge connector winch has been placed on the market by Beebe Bros., 2724 6th Ave., S., Seattle 4, Wash. The winch is reversible and may be in-



stalled either port or starboard, with the operator always on the inboard side of the winch. Optional deck-fastener brackets permit flush welding to steel decks, and allow removal of the winch when necessary.

The winch has three speeds of 4:1, 19:1, and 109:1, with a patented gear change. Two-way dogs prevent line slack.

Two drum diameters of 10 and 14 inches are available. The winch has a low drum center which allows the line to clear the deck by only 4 inches when the drum is fully spooled.

For further information write to the company, or use the Request Card at page 18. Circle No. 795.

Line of Road-Mix Machines

Self-propelled road-mix machines for bituminous mixing and soil stabilization are described in a booklet from Seaman Motors, Inc., 305 N. 25 St., Milwaukee 3, Wis. The Trav-l-Plant has a 7-foot-wide rotor that admixes at the rate of 50 to 350 feet per minute. Bituminous or water binder is pumped through a 7-foot spraybar directly into the churned material. Tachometers and a volumetric meter are part of the standard equipment. The unit is powered by a 90 or 120 hp gas or diesel engine and has mixing speeds ranging from .85 mph to 4.9 mph.

The Pulvi-Mixer model comes without the admixing accessories. A pull-type motorized model is also made.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 827.

General Motors Names Four

Ernest F. Bentley is new General Sales Manager of the Detroit Diesel Engine Division of General Motors Corp., Detroit, Mich. He succeeds V. C. Genn who died in January. Mr. Bentley has been associated with GM since 1934 and has served the company in various capacities. Prior to his present appointment he was Operations Sales Manager.

Three other appointments recently made are Robert V. Baxley, Operations Sales Manager; John C. Campbell, Manager of Manufacturers' Sales; and Louis S. Steele, Industrial Sales Manager.

A New 13.5 h.p.
CONCRETE CUTTER
for only **\$580⁰⁰**
Net f.o.b. factory

DI-MET SEGMENTED DIAMOND WHEEL—Available in two types: STANDARD for hard, dense, cured concrete. SPECIAL for green, uncured concrete and asphalt.

Get ALL the facts on the LOW-COST DI-MET MODEL 135. See your dealer or write us today!

FELKER DI-MET MODEL 135

Here's your answer to all run-of-the-mill concrete cutting jobs at a new low in price! This light-weight 3 wheel Felker DI-MET machine is specially built for all those jobs where a big heavy-duty machine isn't necessary... Use it for cutting CONTRACTION JOINTS, CURBINGS, DRIVEWAYS; FOR INSTALLING UTILITY POLES; FOR TRENCHING, PATCHING, ETC!

Now you can own a genuine Felker DI-MET Concrete Cutter incorporating features resulting from years of experience in the industry—built by the *only* concrete cutter manufacturer who makes his own diamond abrasive blades!

FEATURES

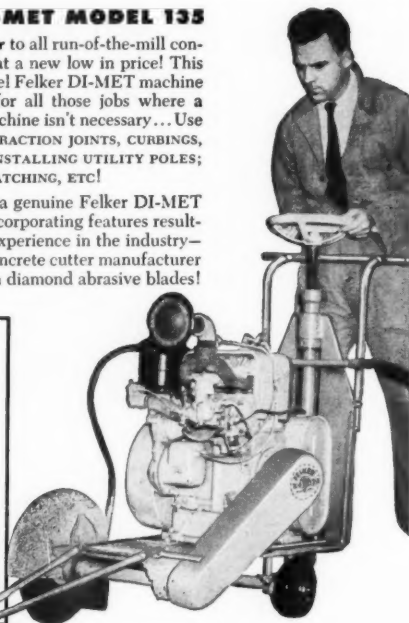
- EASY HANDLING**—3 wheel design with light-weight alloy castings.
- BIG BLADE CAPACITY**—Utilizes from 8" to 18" diamond wheels. Cuts to 3½" depth with 12" wheel.
- SPLIT, MINGED BLADE GUARD**—For cutting close to curbs, etc. 12" standard, 18" optional equipment.
- POWERFUL ENGINE**—Full 13½ h.p. Wisconsin Model TF gives a surplus of power for every cutting requirement.
- PRESSURE COOLANT** supplied through external hose connections.
- INSTANT BLADE DEPTH ADJUSTMENT** with hand-wheel and screw.
- SLOTTED BLADE COLLARS**—Powerful coolant ejection completely flushes blade and kerf.
- HUSKY SPINDLE**—Mounted in Dodge S.C. self-aligning ball bearing pillow blocks. 1¼" single end arbor with keyway.



FELKER MANUFACTURING CO.

Torrance, California

World's Largest Manufacturer of Diamond Abrasive Cut-Off Wheels and Equipment



DID YOU SAY

PORTABLE?

YES! Here's the scale that can be moved from job to job as a unit by merely removing six bolts which hold the side levers in place... It can also be installed as a pitless scale, saving expensive concrete pit - construction costs.

ACCURATE... perfectly balanced for "Lifetime-Accuracy." Wide steel bases, at both ends, support scale, therefore require no concrete footings. Easy-to read weighbeam is chrome-plated. Other vital parts are electro-plated against corrosion.

Capacities:
20, 25 & 30 Ton
Platform Lengths:
18, 22, 24 and 30 ft.

THE
**THURMAN
PORTABLE
TRUCK SCALE**

Est.
1918

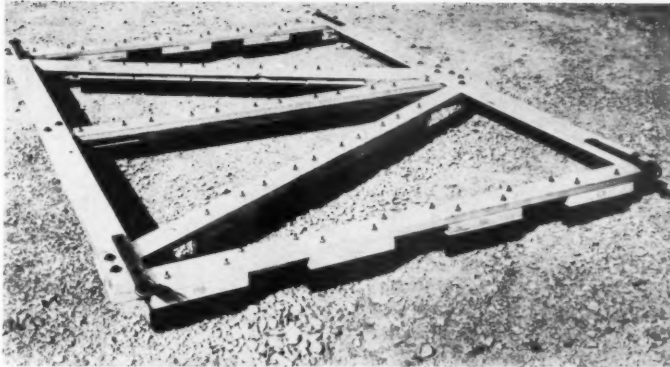
Dept.
C

THURMAN MACHINE CO. 156 North Fifth Street
Columbus, Ohio

Steel Drag Broom

A new steel drag broom for leveling gravel, sand, and peastone is offered by Kinney Spring Steel Broom Co., 56 Kearney St., Needham Hgts., Mass. The drag frame, which is 8 feet 8 inches x 12 feet over-all, has diagonal rows of brooms to carry extra material from side to side and to fill depressions. Bolts are set into the block for attaching to the frame. This eliminates drilling blocks or removing bunches of wire to insert bolts.

Drag frames are furnished com-



plete with brooms attached, or the user may build his own frame using the company's working drawing furnished upon request.

For further information write to the company, or use the Request Card at page 18. Circle No. 737.

Tamblyn, Hough Sales Mgr.

Frank G. Hough Co., Libertyville, Ill., manufacturer of tractors, tractor shovels, and their applicators, has appointed G. A. Tamblyn Sales Manager. He has been with the company for 11 years.

Progress in Motor Grader Design

Allis-Chalmers new AD-40 shows importance of visibility. Operator can see front wheels — both ends of blade while he works.

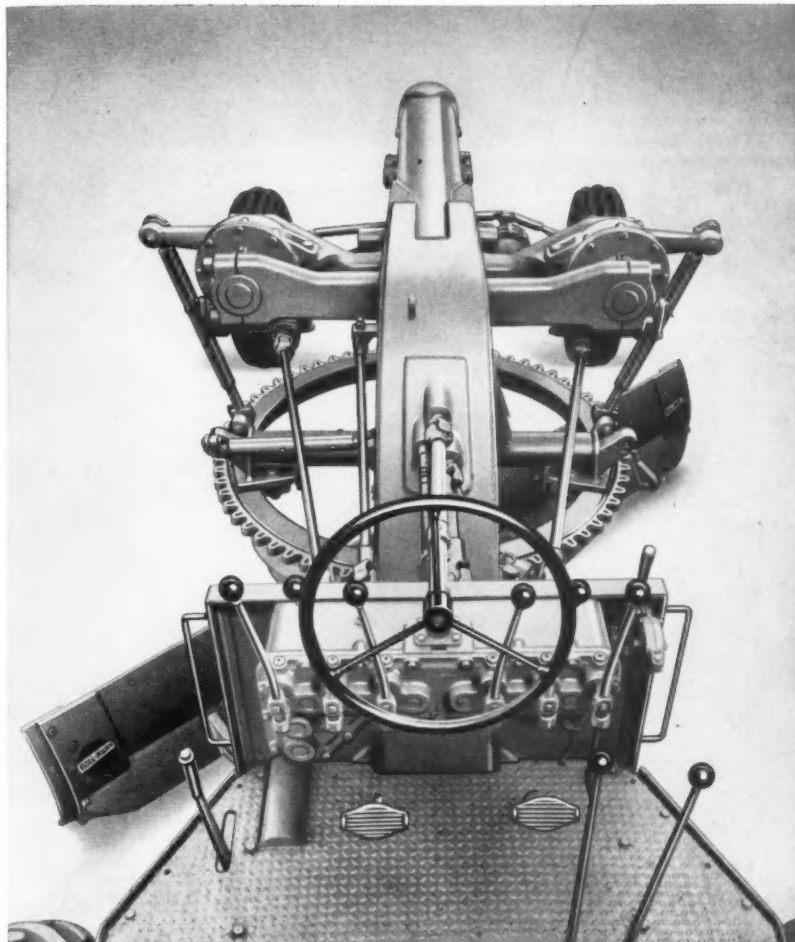
MOTOR grader operator has to be able to see his work to do a good job, whether he's rolling big windrows or doing highly accurate finishing.

Here is how Allis-Chalmers engineers made sure the new AD-40 met these requirements. They carried A-C's single member frame all the way from the front axle to the platform; cut down the size of the lift cases to eliminate blind spots; lowered the control box and eliminated assemblies from the front panel to provide better visibility of the work area directly in front of the operator; tapered the front edges of the platform so that he could see both ends of the moldboard as he works.

A-C fieldmen also knew that a grader operator likes to sit down whenever the job permits. So they've not only given him ample leg room for stand-up operation but also a steering wheel of adjustable height and a seat that rolls forward at a touch for sit-down operation.

Combined with a new kind of power steering, these advanced design features are making Allis-Chalmers AD-40 an increasing favorite with operators and owners alike because it means more work done with less effort. For more facts on the AD-40, it will pay you to see your nearby Allis-Chalmers dealer soon.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE, U. S. A.



(above) Here is actual view operator has from platform of Allis-Chalmers AD-40, showing how well he can see both ends of the blade and both front wheels.

(below) The AD-40 has 104 brake horsepower, 23,000 pounds of weight and tandem drive traction, all it needs to do a better job on heavy duty construction . . . a faster job on maintenance.



New 45-Ton Crane Is Crawler Mounted

A new 45-ton crawler crane has just been announced by The Thew Shovel Co., 28th St. & Fulton Road, Lorain, Ohio. The Lorain 820-KS is a companion machine to the 45-ton Moto-Crane, Model MC-824. The 820-KS has a diesel-powered turntable with a hydraulic-coupling power takeoff mounted on a long wide crawler. Air assist on boom hoist and crawler travel are standard. The worm-driven boom hoist has a ratchet and pawl safety lock.

The chain-driven crawler has two speeds. It is 18 feet 6 inches long and 14 feet 2 inches wide with 48-inch-wide cast-manganese-steel tread shoes. The crawler steering and tread-travel lock are air-controlled and have auxiliary manual controls. For the crawler's two travel speeds in both directions,



power is transmitted by a separate travel shaft on the turntable. Thus both swing and travel operations are independent of each other, or they may be used simultaneously if desired, along with hoisting.

A new 2-piece pin-connected boom is provided on the crane. With it is used a power-operated tilting and folding-type high gantry and a floating harness for reeving six parts of boom-hoist cable. Center sections that come in 10 and 20 foot lengths are available to lengthen the boom to 100 feet. A 25-foot tip extension of 6-ton capacity that can be used either straight or goosenecked is also available.

For further information write to the company, or use the Request Card at page 18. Circle No. 702.

Sewer-Joint Compound

A cold-plastic sewer-joint compound is offered by the Philip Carey Mfg. Co., Cincinnati 15, Ohio. According to the manufacturer, Sewertite, a thermoplastic compound, gives joints a tight but flexible sealing, with resistance to cracking. Made from a formula combining bitumens, organic additives, asbestos fibers, mineral stabilizers and solvents, Sewertite is said to be acid and alkali-resistant, waterproof, and permanent.

For further information write to the company, or use the Request Card at page 18. Circle No. 758.

Portable Pipeline Dredge

A portable hydraulic 8-inch pipeline dredge is discussed in a catalog from the Ellicott Machine Corp., 1611 Bush St., Baltimore 30, Md. It can be moved by truck or rail.

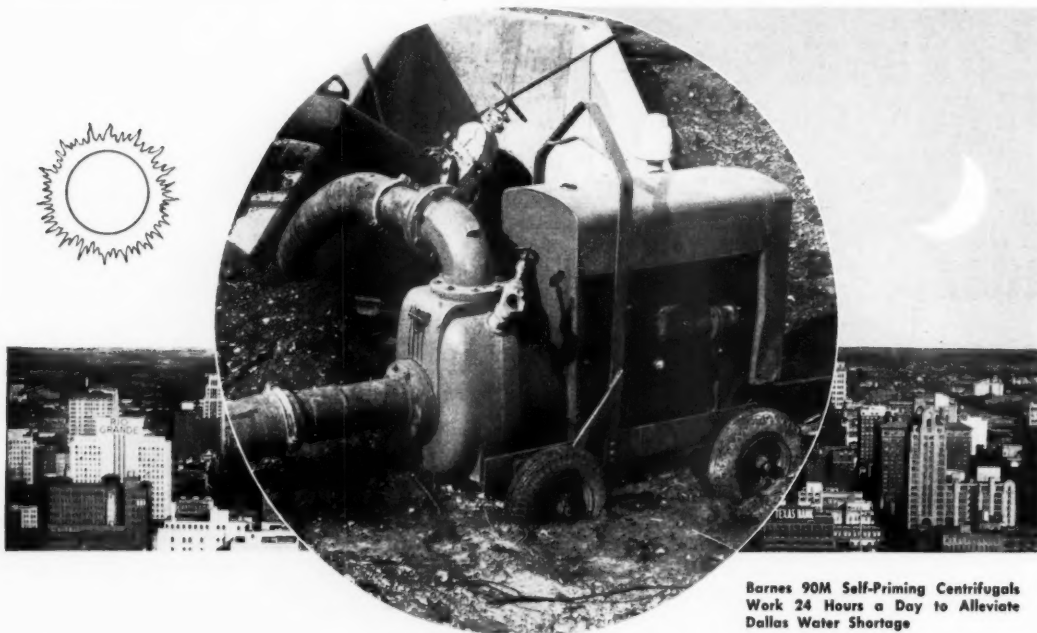
The unit, called the Little Dragon, has a digging depth up to 20 feet and pumps through lines up to 2,000 feet long. The output of the dredge ranges from 50 to 150 yards per hour. The booklet discusses the deck house, the main dredging pump, the 5-drum hauling and hoisting machinery, the hull, and cutting machinery.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 722.

Timken Promotes

Richard K. McConkey is the new Assistant General Manager of the Industrial Division of Timken Roller Bearing Co., with his headquarters at the main office in Canton, Ohio.

Mr. McConkey joined Timken in July, 1935, and has been District Manager in the company's Milwaukee, Wis., Los Angeles, Calif., and Moline, Ill., offices. He held the last-named post until his present promotion.



Barnes 90M Self-Priming Centrifugals
Work 24 Hours a Day to Alleviate
Dallas Water Shortage

WORKING "ROUND THE CLOCK"

BARNES' BIG SELF-PRIMING CENTRIFUGALS AID DALLAS WATER SHORTAGE

Faced with the most critical water shortage in years, Dallas, Texas, last fall, reached for all available water in the area. One of the sources tapped for this critically needed water was Willow Lake, about fifteen miles from Dallas. Here, two Barnes 90M Self-Priming Centrifugal Pumps worked 24 hours a day — day in and day out — pumping the lake into the Trinity River where it then flowed to the Bockman filtration plant at Dallas.

Performing with their usual high efficiency and expected reliability, these big Barnes Pumps were an important factor in keeping Dallas in water during this trying period.



Whether it's water that is wanted or water that is not wanted, remember a Barnes Pump will move more of it — faster, steadier, and cheaper!



Barnes 90M Self-Priming
Centrifugal Pump

The Barnes Complete Line of Pumps range in capacities from 480 G.P.H. to 120,000 G.P.H. Pressures up to 600 ft. or 260 P.S.I.

BARNES MANUFACTURING CO.
Mansfield, Ohio Oakland 21, Calif.

BUY THE BEST . . . BUY BARNES



2 H.P. UNIVERSAL ELECTRIC MOTOR VIBRATOR

WYCO

Place Concrete faster! Light-Powerful

WRITE FOR CATALOG
WYCO GASOLINE AND ELECTRIC VIBRATORS

\$297.00 UP FOR CHICAGO

WYZENBEEK & STAFF, INC.
223 NO. CALIFORNIA AVE. CHICAGO, ILLINOIS

CONTRACTORS AND ENGINEERS

U. S. 30 Is Rebuilt On Wyoming Summit

A 4.5-Mile Improvement Job Between Laramie and Cheyenne
Brings Lincoln Highway to New Traffic Standards

• ACROSS the summit of Sherman Hill between Laramie and Cheyenne, Wyo., where U. S. 30 rises to 8,825 feet above sea level to reach its highest point, the road has been rebuilt by stage construction to modern traffic standards. The 4½-mile \$674,000 improvement job called for grading, structures, drainage, granular subbase and 2 inches of asphalt-stabilized base. At some time in the future, plant-mix surfacing will be placed by another contract.

Brown Construction Co. of Pueblo, Colo., had the contract with the Wyoming Highway Department, and although numerous construction problems like major rock excavation, summer tourist traffic and so on, were present constantly, Brown's officials had the job ready to "sell" to the State by October 1, 1952, only 5 months from its starting date of May 1. It is not a bad time record, considering how much work was done. The job was started with heavy snow still on the ground, and was closed down as late as July 7 with the last snowstorm of the season. In fact, there are no seasons in Wyoming's high country.

The improvement project had been badly needed for several years. The long grade up Telephone Canyon to the top of Sherman Hill east of Laramie is about 12 miles long, and with so much heavy truck traffic using this major transcontinental east-west highway, a traffic bottleneck of serious proportions was much in evidence. Wherever possible, Wyoming tries to build extra truck-passing lanes on these long grades, and the new asphalt-stabilized surface, 36 feet wide, gives that effect to the new road.

The maintenance bill, too, for patching, snow removal, and other routine road doctoring was beginning to run away with itself. By raising the embankment grades slightly above the surrounding terrain and by flattening the cut slopes as much as possible, the State's engineers hoped to duplicate their success on many another section in using the wind, as much as possible, for snow removal. It has been proved beyond doubt in Wyoming that much snow-removal expense can be eliminated through proper design prior to construction.

Wide Roadbed

The new roadbed has a top width of 56 feet, with a drain slope of ¼ inch per foot. The wide shoulders outside the 36-foot stabilized surface consist of primed subbase, topped by a double-penetration course of asphalt and chips. This, also, ties in with Wyoming's contemporary design plans to give her subgrade good drainage and to keep them watertight from above as much as possible.

The asphalt-stabilized upper 2

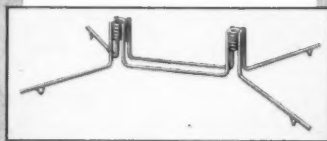
inches resembles regular road-mixed material, and gives a good riding surface until the job can be plant-mixed later on. Under the stabilized material is a full-width course of ¾-inch-minus aggregate, mostly of crushed material, 3½ inches thick. Underneath that is a full-width course of 1-inch-minus aggregate 3 inches thick. Under-

(Continued on next page)



A Lorain power shovel, working in blasted rock loads a Koehring Dumptor for the U. S. 30 job in Wyoming. Ray Day Photo

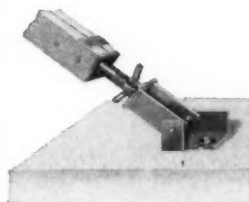
3 NEW SUPERIOR ACCESSORIES for more efficient handling of...



"PICK-UP" INSERT with two 1" coil bolts, will safely lift a load of 11,000 lbs. when embedded in 3,000 lb. concrete slabs.



"ANCHOR" INSERT in both the "Tilt-Up" slab and the floor slab provides anchorage for slab brace bolts.



SLAB BRACE for temporary anchorage is quickly installed and adjusted. Has exclusive pivoting action.



Are you bidding on a "Tilt-Up Slab" job? Are you starting a "Tilt-Up Slab" job? Then you will be interested in Superior's three new accessories, designed for faster and more efficient handling of precast panels.

The Superior "Pick-Up" Insert provides dependable anchorage for bolts to which slings are attached when the panel is raised. "Anchor" Inserts in both the "Tilt-Up" slab and the floor slab secure the temporary bolts to which the braces are attached. With Superior's adjustable and pivoting Brace you have an efficient as well as inexpensive answer to both ordinary and unusual bracing problems... you merely assemble with 2 x 4's of lengths to fit individual jobs.

Leading contractors on the Pacific Coast and in the Midwest already are users of these new specially designed inserts and braces.

For details write today for Superior's Bulletin "T U-1".

SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

New York Office
1775 Broadway, New York 19, N. Y.

Pacific Coast Plant
2100 Williams St., San Leandro, Calif.

U. S. 30 Is Rebuilt On Wyoming Summit

(Continued from preceding page)

neath that is a decomposed-granite selected embankment material 6 inches thick. Under that is the sub-grade, compacted just as tight as modern sheepfoot, pneumatic, and steel rollers can make it. The statement is perhaps a bit far-fetched, but densities of 95 per cent, referred to the Modified method of the AASHTO, are average.

The stabilizing oil for the upper 2-inch cake is an MC-3 asphalt. The stabilized portion is further protected by a seal coat, consisting of an asphalt emulsion and 1/4-inch-minus limestone chips.

Subcontracts Awarded

To help rush the project through during the few months when the



Two International TD-24's with LeTourneau Model W Carryalls work on a small flank dike near the highway to control rainwater coming into the new highway.
Ray Day Photo

weather was suitable, Brown Construction Co. awarded two main subcontracts. The production and

installation of decomposed granite, 1-inch and 3/4-inch aggregates, the oil-mat material, and limestone

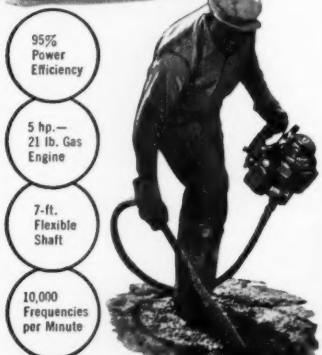
chips went to Hopkins & McPherson of Laramie, Wyo. A considerable portion of the job passes through range country and calls for a limited-access fence on both sides of the highway. Installation of this fence was awarded to Anderson Construction Co. of Longmont, Colo.

Clearing, Pioneering Begin

Right from the start it was obvious that there was no getting away from the old highway, because in general the old road was placed on about as permanent an alignment as it is possible to make economically through the canyon. This meant that clearing, pioneering, and all the other parts of the work would have to be carried on with traffic using the center of the work in many places.

Realizing this, Brown decided on a clever bit of public relations which, as late as September 10, had prevented accidents on the road. Thousands of printed slips, reading as follows, were made up for delivery by a flagman:

"To Those Who Are Driving This Highway: This road is now under construction and we ask you to bear with us while using this highway. This route takes you through 'Telephone Canyon' and over 'Summit', which is the highest point on the Lincoln Highway—U. S. 30—at an elevation of 8,825 feet.



GUARANTEED PERFORMANCE

Get first-hand experience in this new revolutionizing technique. We'll place a new MALL 2MGV Vibrator on your job on a guaranteed performance basis—without obligation. You must be completely satisfied with its (1) power; (2) speed; (3) handling ease; (4) durability and quality.

40 Factory-Owned Service Warehouses, Coast-to-Coast, To Give You Fast, Dependable Service.

MAIL THIS COUPON TODAY

Send me additional information about MALL
☐ Concrete Vibrators; ☐ Chain Saws;
☐ Portable Tools.
 Name _____
 Company _____
 Address _____

MALL TOOL COMPANY
 7743 S. Chicago Ave. Chicago 19, Illinois

Patented Feeder Agitator



For spreading damp torpedo sand. For free flowing material, simply disengage clutch or remove agitator. Photo also shows how spring tension-held apron holds material in hopper without spilling. Material feeds out of corners without shoveling. NO spill-over—back, side or front.

Calibrated Control Lever



Delivers 12 to 100 lbs. per sq. yd. in ranges of 2 to 5 lbs. per notch in relation to truck spread.

A NEW KIND of spreader that SPREADS where others WON'T



FLINK

"Even-Seal" SPREADER

Spreads uniformly—forward or backward—regardless of truck speed up to 20 m.p.h.—Operates on steep grades—no spill-over, back, side or front. Patented agitator—one man operated—remove or replace tires in 15 minutes. Balanced, will not tip over. No stopping to make "spread" adjustments—Get the facts today.

- ★ It's entirely different
 - ★ So many better job features
 - ★ So many cost cutting advantages
- SEND FOR NEW DESCRIPTIVE LITERATURE
 address DEPT. 2
STREATOR, ILLINOIS



FOR HYDRAULIC HOISTS AND DUMP BODIES, THE BUY WORD IS GALION



GALION MODEL 880 heavy duty hydraulic hoist and Model 12 contractors body easily handle 10 1/2 to 15 1/2 ton loads.

If you want built-in ruggedness, extra lifting and extra carrying capacity . . . always specify Galion! Galion hydraulic hoists and dump bodies work longer with less maintenance and lower operating costs. With Galion, jobs begin on time, continue steadily without interruption . . . end on schedule.

For big jobs (or for little ones), Galion manufactures a complete line of standard and heavy duty hoists and dump bodies to meet every construction need. And . . . if you need extra heavy duty or special units to fill unusual requirements, Galion will be glad to design and build them for you.

GALION MODEL 700 hydraulic hoist with steel sub-frame, ideal for loads of 6 1/2 to 8 1/2 tons.

JUST SEE YOUR NEAREST GALION DISTRIBUTOR—TODAY!



THE



GALION

ALLSTEEL BODY COMPANY • GALION, OHIO



This busy drilling scene on the deep summit cut shows drillers, wagon drills, and Gardner-Denver compressors at work as powder holes go down into the rock. Ray Day Photo

"At the moment there is a great deal of equipment on the job, the road is rather narrow and steep, and the curves are sharp. When finished, this road will be one of the finest high-type roads in Wyoming. Please be on the lookout for equipment on the highway, drive as carefully as possible, and we will see to it that you get through with the least possible delay consistent with safety.

"When you come back over this road after its completion, we are sure that any inconvenience you may be put to at this time will be offset by the pleasure of riding on a splendid highway.

"Thank you.

Wyoming Highway Department
and
Brown Construction Co.
Pueblo, Colorado."

The slips proved to be one of the most effective warning devices ever dreamed up by the company, and they met with tremendous public favor. Many cars began to back up to get an extra, for souvenirs. An average of 1,200 cars a day received one of these slips, but it was

next to impossible to find any which had been discarded through the job.

All pioneer work to establish temporary haul roads was done by a Bucyrus-Erie angle-blade dozer

mounted on a TD-24 International tractor. According to General Superintendent H. P. Graham, the somewhat bigger than usual combi-

(Continued on next page)

SOIL-AIRE
ROLLPAC

Ruggedly built for heavy duty service

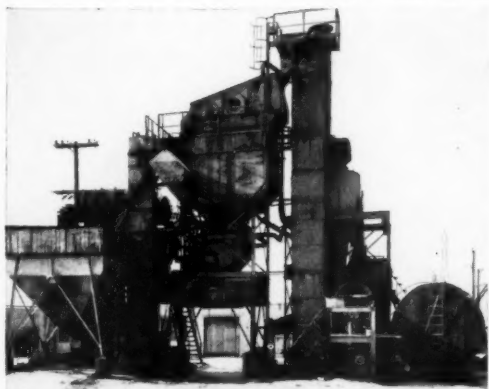
A new one-ton Roller with Detachable Outside Edger Wheel. Rolls flush with curb or wall.

A leading Contractor says,
"Every Black Top man will approve of your new detachable edger wheel. It is a very valuable improvement."

Order Early—Limited Production
Sold by over 75 Distributors in the U.S. and Canada

SOILAIRE INDUSTRIES Minneapolis 3, Minnesota

Cummer Asphalt Plants and the World's Busiest Highways Have Grown Up Together



heated to 350°-400° F.) This complete plant is equipped with dust elevator, washer, enclosed hot elevator. Electrically powered throughout, each unit is individually driven.

Cummer Plants Incorporate These Superior Features:

Mixing towers with vibrating screens and mixer.
Dust collector discharging reclaimed dust into hot elevator.
Two furnace combustion with low pressure burner equipment.

Cold storage bin and feeder.
Enclosed hot elevator.
Diesel or electric power.

CUMMER PLANTS—complete with all motor and starter switches—are available in sizes from 55 to 125 tons per hour. Send for your copy of the descriptive Cummer Catalog today.

THE F. D. CUMMER & SON COMPANY

1827 East 18th Street

Pioneer Builders of Fine Asphalt Plants

Cleveland 14, Ohio

Put Cummer Plants to Work Building Your "Roads to Profit"

The stupendous, unceasing movement of American people and American goods is made possible by twin developments as closely related as two sides of a coin—the vast network of highways and automotive transportation. Cummer, which has been building fine asphalt plants since 1895, has been identified with this amazing growth and expansion from the very beginning.

Typical of dependable Cummer Asphalt Plants—famous for over half a century for profitable production—is the stationary model shown here owned and operated by Asphalt Paving Products Company, Inc., Detroit, Michigan. Designed for efficiency and ruggedly constructed, this Cummer plant consistently produces 80-125 tons per hour (based on 5% initial water content, dried to within 1/2 of 1% and

CIMCO TWIN BIN

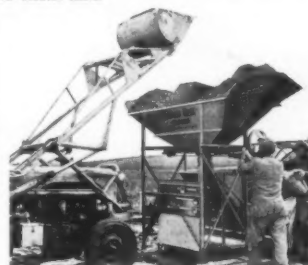
Patent Pending

Choose the RIGHT Twin Bin for a practical answer to QUICKER—CHEAPER—EASIER—DEPENDABLE concrete mixing.

Models A—AW Twin Bin are used with 1-2-3 bag mixers and built to fit your standard wheelbarrow scales for economy.

Models B—BW Twin Bin are used with 1-2-3-4 bag mixers and larger pours.

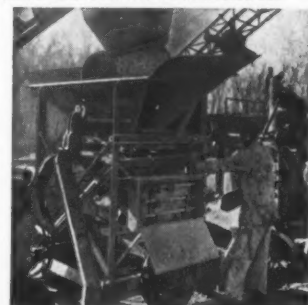
Models AW—BW are permanently mounted upon a rubber tired trailer. You may obtain the trailer if you want to convert your Models A—B to mobile units.



Twin Bin Model A is shown being loaded. The low height allows the use of small low-priced loaders or cranes. The operator is moving the positive shut-off valve to weigh accurately the first time.



Twin Bin Model BW is shown in the forward dumping position. The operator releases the weighed aggregate at the right spot in the mixer ship. The Scale Bin moves on greased rollers, jam protected bearings. Its movement allows it to be used with some bituminous plants. Note the screw-jack leveler below left.



Twin Bin Model BW is shown working and being loaded on its permanent trailer mounting. It is easy to set up work, operate and pull. The tongue is in the fold-up position. This model stores and weighs larger batches. Note the Stock Bin with its divided wall and the beams and working parts of the built-in 1600 lb. scales. Three men are doing this job.

For Complete Information On How to Use and Choose the Right Twin Bin for Your Job, Write

CIMCO

BOX 422, MARSHALLTOWN, IOWA, U.S.A.

Write for information on distributor territories now open

U. S. 30 Is Rebuilt On Wyoming Summit

(Continued from preceding page)

nation worked fine, and roads were built into some well nigh inaccessible places along the canyon walls.

The portion of the canyon covered by the widened portion of the new highway was covered with quaking aspen and lodgepole pine, some quite thickly grown. A labor crew and Mall power saws soon made short work of tree felling, after which a TD-24 and dozer piled the trees preparatory to burning. Clearing stayed out ahead of the other operations with little trouble in spite of snow on the ground at that stage of the job.

Big Powder Job

The 460,000-cubic-yard excavation job included approximately 250,000



General Superintendent H. P. Graham and his Mercury automobile have plenty of room to pass under the new roadway through this Armo Multi-Plate culvert pipe, which was installed principally for a cattle underpass.

Ray Day Photo

cubic yards of rock so solid it had to be drilled on 5-foot centers and shot with heavy loads of powder. Five carloads of powder were eventually hauled into the project to move the stubborn mixture of soft

sandstone, granite, limestone, and other formations typical of the top of the Continental Divide—in which general area the project is located.

One of the formations was so tough that a new driller, one morn-

ing, followed Graham's instructions to the letter to start a hole with a regular rock bit. Before he could even start to penetrate the bit, he had turned all the bit knives flat! The bit was completely dull and hadn't even started to drill.

Timken tungsten carbide bits were used for this and other abnormally hard formations. The soft sandstone responded very well to Timken regular bits. Compressor equipment included four 500-cfm Gardner-Denvers, mounted on special mobile trailers which could be towed quickly by a truck or tractor. There were a pair of 300-cfm Ingersoll-Rands and an Ingersoll-Rand 210. Of the six wagon drills necessary to keep ahead of the excavation spread, four were Joys and two were Ingersoll-Rands.

The soft sandstone especially showed a tendency to absorb explosive force, and in addition, the ground was blocky, broken, and often standing on end. Column-loading therefore had to be the rule, with hole centers shortened up to about 5 feet and bottomed at 2½-inch diameter. Du Pont Special 40 per cent Gelex was used in some of the wet holes, but the majority of loading was done with Du Pont's Red Cross free-running 40 per cent explosive.

A successful method of breaking off shots clean was tried, and it left the adjacent rock unshaken when drills resumed their work. The trick was simply done: the last row of holes was equipped with short millisecond delay exploders, so that this last row of holes would kick over into that portion covered previously by the instantaneous blast. One of the requirements of the specifications which made blasting still tougher was a provision which prohibited rock fills in more than 2-foot lifts. To make 2-foot lifts in a rock fill, the rock must be not greater than that dimension. It upped the powder requirements, made for some secondary shooting and jackhammer work, but it delivered good fills. In one cut alone there was 50,000 cubic yards of rock with hardly a wheelbarrow full of dirt.

As a safety measure, a special improved blasting battery introduced by Du Pont was used. It is impossible, as in the case of older-type hand-blasting machines, for a man to set it off by falling on the upraised handle. The new blasting machine is a dry-cell affair, and requires two hands to set a shot off. It will pull 1,000 holes at a blast quite easily; in fact, on several shots on the job it was overloaded slightly and still did a perfect job.

Loading and Hauling

Loading and hauling of blasted

TO THE CONTRACTOR and HIGHWAY ENGINEER

FOR years highway engineers have been working toward the elimination of road forms, and at the same time building a road that was known to be definitely level on both sides of the longitudinal joints.

Accuracy could be obtained at the shoulders with a line. The thickness of the course could be ascertained with a gauge but a line at the center of the road for establishing an absolute level was obviously impractical. Up to now, even with the most modern equipment, to arrive at any approach to accuracy in maintaining the level of a black top course over its full width was no more than a reasonably good guess. Matching devices can assure that one course will match the other course at the joint. In other words, both parallel courses will be the same depth where the courses abut, but the course at any given point may have a roll in it.

The shoulder remains true because of the line—The longitudinal joint can be tight—But, the center of the road is veiled in mystery insofar as its level qualities are concerned. There has been no means to correct the roll and dips that won't show under a straight edge.

Now, for the first time in the history of paving this situation can be corrected and it is possible for the contractor and Highway Department Engineers to know exactly what the condition of the road surface is insofar as its level characteristics and slope are concerned.

The direct-lift, one-piece-unit Cutter Bar Screed of the Adnun Black Top Paver has made possible the application of a Fluid Level to black top paving. The Fluid Level can be used either with a line for a primary setting along the edge of the road or without it. A simple, accurate device, it serves the purpose of leveling up a road course just as a carpenter uses a level to level up a structure. It permits correcting for any desired slope at any station. It permits holding an absolutely level grade without modifying the desired crown. It permits leveling up old shoulder and blending it into the crown, but most important of all it takes out the dips that won't show under the straight edge and it gives you absolute control of the laying of the *center of the road*. With the Adnun Fluid Level you both match and joint and *take out all the undulations on each side of the joint!* Your road is as level and true at the center as it is at the shoulder.

The Adnun Fluid Level should be standard equipment on every black top spreader. It means better, smoother, longer life roads for the State and County. It means less waste of material, smoother running jobs and better work acceptance for the contractor.

The season is opening! Now is the time to get the full story on this Adnun device. *Write for details.*

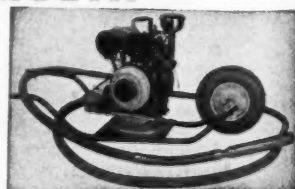
ADNUN
TRADE MARK REGISTERED
BLACK TOP PAVER

BLAW-KNOX

FOOTE CONSTRUCTION
EQUIPMENT DIVISION
OF BLAW-KNOX CO.
1916 State Street,
Nunda, New York



ROETH



CONCRETE VIBRATORS
MOUNTED ON WHEELBARROW CHASSIS

Write for details and prices

ROETH VIBRATOR CO.

9229 Chestnut Ave., Franklin Park, Ill.

CONTRACTORS AND ENGINEERS

rock was a job for four shovels and hauling equipment. Shovels included an 80-J Lorain, a Model 50 Lorain, a 604 Lima, and a Model 6 Northwest. Hauling units include six Euclid 11-yard end dumps and 9 Koehring Dumpsters. The average haul for the "Eucs" is around 3,000 feet, with a mile the maximum. The Dumpsters are used on shorter hauls with 1,200 feet a fair average.

Strangely, the broken rock was not hard on the Amsco dippers on the shovels, in spite of its abrasive nature on drill bits. The material loaded well in the 1½, 2, and 2¼-yard dippers on the shovels, and with the aid of a dozer it could be placed in the fill in lifts which met the limits of the specifications.

Scraper Fleet Also Used

In addition to a heavy rock spread, a fleet of Carryall scrapers was also used, consisting of three LeTourneau Model W's with International TD-24's as prime power and an Allis-Chalmers HD-20 as pusher. In addition, there was a D8 Caterpillar which was used with McCoy sheepsfoot rollers for compacting, five D8 dozers, and a D6. Auxiliary equipment with this spread also included 3 No. 12 Caterpillar motor graders, 3 water pumps, two 2,500-gallon water trucks, and an 1,800-gallon water truck.

The scrapers were used on hauls up to 2,000 feet, and in spite of the fact that the tractors were having to work at abnormal altitude (around 8,000 feet), there was little power loss evident in the loads which came out of the pit. There is one feature of interest regarding the comfort and convenience of operation of these modern machines: so easy are they to operate in a pit that one operator on crutches as a result of a bad accident last year in a crushing plant was able to operate one of the big red TD-24's and its Carryall scraper with no discomfort or "fight" whatever. His loads of dirt were just as heaped as those of his buddies.

Dirt from the Carryall scrapers was spread in lifts under 8 inches thick, watered if necessary, and rolled. Embankments had to be brought up evenly to carry traffic through the job, and operators had to be careful about traffic. But all mishaps were avoided, and the fills were made in record time.

Considerable scraper work was also done in connection with training dikes outside the highway limits, which were built to train runoff water into the various drain structures through the embankments. One huge Armco Multi-Plate culvert carries some drain water, but its principal purpose is to let cattle get through under the highway from one range to another. It is surfaced

on the bottom with road-mixed asphalt.

All embankment and cut slopes in earth areas were smoothed down by motor-grader blades. It is expected that considerable roadside seeding may be done later in the fall.

Base Course and Rock Work

After its final inspection and acceptance, the finished earthen subgrade was covered as quickly as possible with the various courses of granular base. The first application consisted of the 6-inch decomposed-granite base course, called "selected embankment" in Wyoming. This material was located conveniently near the summit in a large pit. It dug easily with a Northwest 25 power shovel, without blasting. The material was loaded to a mixed fleet of dump trucks, hauled to the job, and was dumped according to taped distances for the various loads.

Before this material was laid down, it was carefully mixed out by a No. 12 Caterpillar motor grader, whose purpose was to blend the fine and coarse particles to make an even mix. If the material required water, which it usually did, this was trucked in and applied. The decomposed granite was then laid from the quarter point by a motor grader, with a Bros straight-wheel rubber-tire roller following up behind a Farmall tractor.

The 1-inch, ¾-inch, and limestone-chip aggregates had to be made by crushing and screening plants. As was the case with the decomposed-aggregate pit, one location was sufficient for the job, and the rock-production equipment was set in at the west end of the project near the foot of the Telephone Canyon grade.

The 1-inch material was produced by a small Cedarapids rock plant

with a twin 12 x 36 jaw crusher and conventional screens. The ¾-inch material was manufactured by a considerably larger Cedarapids plant, which was driven by a Caterpillar diesel and which had a 10 x 36 primary jaw and 24 x 40 roll crushers, in addition to a double-screen deck. Both plants were fed by a D8 and dozer operating in the pit.

One feature of interest on this part of the work was the use of special patented feeder traps developed by C. H. Acord of Wheatland, Wyo., the plant operator. Acord has made and delivered about six of these units to various Wyoming and Colorado contractors. The feeders are mounted on their own wheels, and are fully mobile for the highway. To set them in place, they are simply spotted in position, the wheels are blocked, the wings are extended and braced, and the trap is ready to be

(Concluded on next page)

New Heiliner scraper travels 25 mph fully loaded . . . has 22 TIMKEN® bearings to help

THIS is the latest model 2C500 Heiliner similar to those purchased by the U. S. Army Corps of Engineers in 1952. The unit is equipped with a 13 cubic yard scraper, and features Hydro-Steer, unobstructed visibility, and speeds up to 25 miles per hour—even when loaded!

To insure rugged dependability under the severest kinds of service, Heil uses a total of 22 Timken® bearings in the scraper's vital parts. In the differential, engine shaft and pinion, Timken bearings assure accurate gear meshing, reduce wear. That's because the tapered construc-

tion of Timken bearings enables them to take radial and thrust loads in any combination. Shafts are held in positive alignment, a smooth flow of power is insured.

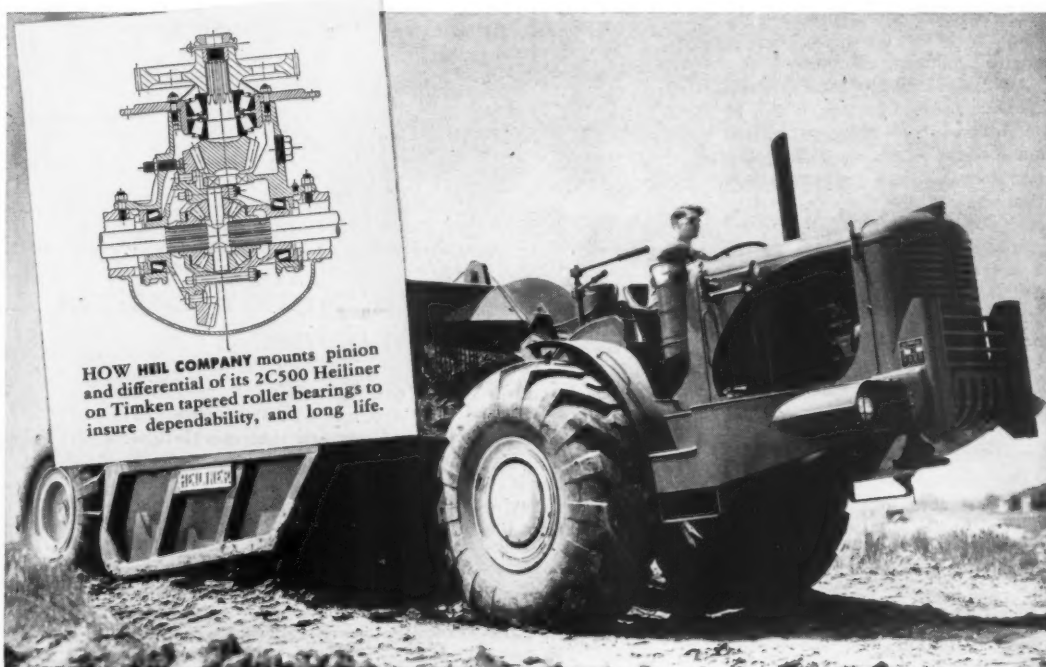
Timken bearings on the scraper wheels are more than a match for heavy shock loads. Line contact between rollers and races of Timken bearings provides load-carrying capacity to spare. Bearings are case-hardened to give them tough, shock-resistant cores and hard, wear-resistant surfaces. Timken bearings are also used in the scraper's power control unit, and hydraulic pump.

Because they keep housings and shafts concentric, Timken bearings make closures more effective. Lubricant stays in—dirt stays out.

No other bearing can give you all the advantages you get with Timken bearings. Make sure they're in the equipment you build or buy. Always look for the trade-mark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.

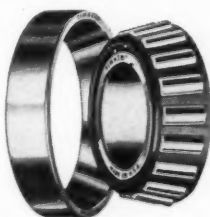


HOW HEIL COMPANY mounts pinion and differential of its 2C500 Heiliner on Timken tapered roller bearings to insure dependability, and long life.

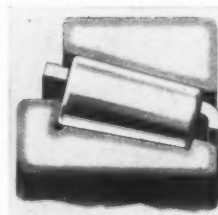
SELF-PRIMING CENTRIFUGAL PUMPS

Engine belt and electric driven pumps with many new features to give you outstanding performance at low cost. A.G.C. rated. Write for special bulletins.

RICE PUMP & MACHINE CO.
220 N. 12th Avenue, Grafton, Wisconsin



TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



HARD ON THE OUTSIDE, TOUGH ON THE INSIDE

Rollers and races of Timken bearings are case-carburized to give a hard, wear-resisting surface and a tough, shock-resisting core. Result: longer bearing life. The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis Timken steels.

NOT JUST A BALL — NOT JUST A ROLLER — THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

U. S. 30 is Rebuilt On Wyoming Summit

(Continued from preceding page)

fed by a dozer. The traps have Ford-driven conveyor belts from 24 to 36 inches in size. At a pinch, they have been used for loading pit-run material directly into trucks, and for stockpiling material away from a surge bin when not enough trucks were on the job.

The crushed-rock material was trucked to the job and laid by blade-mixing and rolling in very similar fashion to the decomposed granite. The last of this material stopped just 2 inches short of final grade for the stabilized material, and after being polished smooth by blades, it was steel-wheel-rolled by a Buffalo-Springfield roller to make the surface dense and smooth. No prime coat was used ahead of the road-mixed or stabilized 2-inch topping.

Barber-Greene Did Stabilization

The 2-inch asphalt-stabilized topping, which serves as a riding surface for the time being, was handled through a Barber-Greene traveling plant. Mineral aggregate, 3/4-inch minus, was first dumped on the road, blade-mixed, and shaped into a windrow for the machine. The material was blade-mixed until its particles were surface-dry.

The Barber-Greene machine then moved along the windrow, which was laid at about the quarter point, and applied 5 per cent of MC-3 asphalt to the material. Hot MC-3 was hauled to the job from Frontier Refining Co.'s Cheyenne refineries, and it usually arrived at its application temperature of 200 degrees. If a load had to stand overnight, however, there was a Grace heater on the job to give the asphalt a boost the following morning.

After the Barber-Greene traveling plant finished its mixing, No. 12 Caterpillar motor graders turned and mixed the windrow at least a dozen turns to eliminate the volatiles and aid the final mix. The machines continued to work until the mixing oil began to "break"—an old phenomenon to road-mix men—and at that point the motor graders began cutting out of the windrow for the laydown. As the graders drifted the material across the road, Bros straight-wheel rollers moved in behind the machines. A steel flat-wheel rolling on the surface completed this part of the picture.

The Barber-Greene travel plant has often mixed out as much as a mile of material a day on other jobs, but its purpose on the Telephone Canyon project was to keep up with grade as it was prepared, so no unusually good runs were made. The oil mat was always kept up with the grade, however, so that traffic disturbed the last granular surface as little as possible.

Shoulder material was placed with the help of an Etnyre distributor and a Buckeye spreader box. Conventional methods were used here, and there is nothing of particular interest about the operation except that the Wyoming Highway Department hopes that it will be an answer to water seepage into subgrades and bases. In addition, the use of asphalt-penetration treatment on the shoulders is expected to tie the

shoulder rock down and eliminate much of the usual windshield damage.

The fencing was rapidly installed, too. It consists of treated cedar posts and wire-mesh material. A Monroe auger mounted on a 4-wheel-drive Jeep made short work of the postholes, even through much of the rocky going.

Personnel

Brown Construction Co. operations were under the field direction of General Superintendent H. P. Graham. Shovel and powder work was directed by Dan Ratliff, with Glen Milsap in charge of the tractor-scraper spread. William Murphy was

Office Engineer. C. H. Acord was in charge for Subcontractors Hopkins & McPherson.

For the State of Wyoming, the job was designed and supervised under the general direction of J. R. Bromley, Superintendent of the Wyoming State Highway Department; C. W. Beaver, Plans and Office Engineer; and R. G. Stapp, Road Design Engineer; with Talcott Moore as Construction Engineer and Gardner Manfull as Resident Engineer.

Steel Hose Ends Catalog

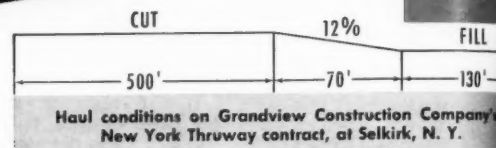
Steel hose ends and industrial hose appear in a catalog from the

Weatherhead Co., 300 E. 131 St., Cleveland, Ohio. The company offers 5 types of hose. A single and a double-fibre braid with synthetic cover are for low and medium-high pressure respectively. The company also makes a high-pressure double-wire-braid hose with synthetic cover and a medium-high pressure hose with single wire braid in impregnated cotton cover.

The booklet gives specifications and assembly instructions for reusable couplings for each type of hose.

To obtain this literature write to the company, or use the Request Card bound in at page 18. Circle No. 835.

51 PAYLOADS AN HOUR



LOAD—haul—spread—and return up a 12% grade—51 times per hour!

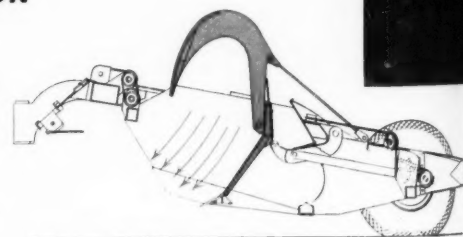
That's the record of the three Heiliners owned by Grandview Construction Company of Mt. Vernon, N. Y. Moving 1,400,000 cu. yds. of sand clay with a heavy water content, each Heiliner made 17 trips per hour—with an average cycle time of 2 min. 56 sec.

Here's the kind of fast-stepping Heiliner performance which makes earthmoving profitable. It's the kind of production that gives *you* the edge when bids are let.

Positive "TILTING FLOOR" EJECTION HELPS SLASH CYCLE TIME!

On Grandview's New York Thruway job, spread and turn time averaged 15.9 seconds . . . spreading heavy, sticky sand clay! It's proof positive that the Heiliner's positive "Tilting Floor" ejection helps cut cycle time to the bone.

Heil's exclusive "Tilting Floor" ejection is the simplest type of forced ejection known. The floor of bowl is



hinged back of the cutting blade. As the rear push-out ram is activated by the relatively low line pull, the floor simply tilts up to a maximum discharge angle of 75°. The load is forced out the wide front opening, while even the stickiest material is scoured from the sides and stationary back of the bowl. Material is dumped fast and clean . . . there's no extra yardage left in the bowl to cut down the size of your next load.



12 AND 18-YD. HEILINER SCRAPERS

20-YD. HEILINER BOTTOM DUMP WAGON

4, 9, 11 AND 16-YD. TRACTOR DRAWN SCRAPERS

CABLE POWER UNIT

Ten Engineer Scholarships

The American Institute of Steel Construction is sponsoring a scholarship program for the fourth year in succession. Ten \$1,000 scholarships will be awarded in 1953 to high-school seniors wishing to have a career in civil or architectural engineering. Winning candidates may use their scholarships at any one of 125 accredited colleges in the country offering a course in civil or architectural engineering.

Candidates, who must be interested in a career in civil or architectural engineering and must show scholastic ability along such lines, have to be nominated by one of the

280 structural-steel fabricating firms which are members of AISC. Those who wish to compete but do not know of any steel-fabricating firm in their area may obtain a list by writing to American Institute of Steel Construction, 101 Park Ave., New York 17, N. Y.

Applications will be accepted up to April 30.

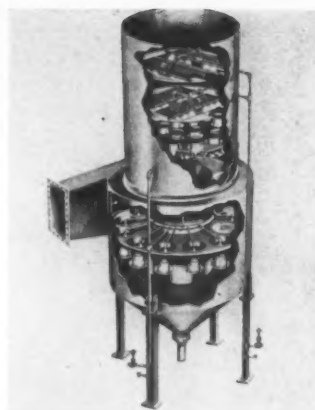
Booklet on Operation Of Cranes and Shovels

The fourth in a series of bulletins on the operation and maintenance of excavating equipment has been prepared by the Power Crane and Shovel Association.

Technical Bulletin No. 4 is divided into two parts. One part describes the types of available attachments and the other covers the use of attachments and methods of positioning basic units.

Attachments described include load-dropping units, clamshells, pile-drivers, magnets, tongs, and grabs. Operating instructions cover positioning the unit, working in the bank, digging procedure, and other hints for getting maximum production. The bulletin is well illustrated throughout with line diagrams.

Copies may be obtained from the Power Crane and Shovel Association, 74 Trinity Place, New York 6, N. Y. The price is \$1.00.



New Scrubber Removes Asphalt-Plant Dust

A precipitating-type scrubber system for removing dust from stack gas is announced by the Johnson-March Corp., 1724 Chestnut St., Philadelphia, Pa. The unit is suitable for use in asphalt plants. Dust removed from the air is reduced to a watery sludge which can be discharged into a tank or pond for removal of the solids. Cleaned gases are discharged into the atmosphere. The Model LP scrubber comes in capacities ranging from 1,500 to 48,000 cfm.

As the dust-laden air enters the scrubbers, the larger dust particles are separated centrifugally and the gases are pre-cooled. The large mass of gas is divided into many smaller volumes through scrubber throats and the gas velocity is accelerated so that the entrained solids impact upon impinger plates. A high-velocity water jet scrubs the solids from the gas stream. The system uses about 2 gallons of water per minute at 40 to 50 psi for each 1,000 cubic feet of gas per minute. A recirculation system can be used when water supply is a problem.

In a lower chamber the gases expand and part of the solids discharge in the form of a slurry, as the gas then flows upward through a center stack. The process is repeated as needed. Finally a solution called Compound M is added to remove low-micron particles and entrained mist.

For further information write to the company, or use the Request Card at page 18. Circle No. 821.

Chart Compares Welding Rods for Hardsurfacing

A new hardsurfacing comparison chart has been issued by Rankin Mfg. Co., 3072 W. Pico Blvd., Los Angeles 6, Calif.

The bulletin lists the leading manufacturers of hardsurfacing welding rods, and the specific rod recommended for various hardsurfacing requirements.

In addition, one page is devoted to an index of pertinent information which welders use in everyday work. Approximate melting points of various materials; relative comparison of Rockwell, Scleroscope, and Brinell hardness tables; S.A.E. steels-numbering system; heat and temper colors of steels; and a job-estimating table are included. This section of the bulletin can be used as a handy reference guide.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 853.

WITH THREE FAST-STEPPING HEILINERS



**STEP UP YOUR
EARTHMOWING PROFITS
WITH THESE
HEILINER ADVANTAGES!**

For faster loading, the dirt "boils" up in the center of the bowl, loading front and back evenly so no long pull is necessary to fill clear to the back. Haul speed is fast . . . 25 MPH fully loaded. The powerful 200 HP Cummins diesel gives you lugging power to spare, while big 24:00 x 29 tires with wide-base rims provide the extra traction and flotation you need in soft going. Heil's exclusive, patented Hydro-Steer handles with passenger car ease . . . this easy steering control plus big, safe four-wheel brakes give operators confidence to use the full

power and speed of the rig. Heil's famous planetary drive, with full 4" gear faces on sun and planet gears, provides a low-torque drive for smoother, more positive power transmission to each wheel, and permits full utilization of engine horsepower.

Heiliners are designed from the ground up with many other features to keep up a profit-making pace on every job, shift after shift. Watch a Heiliner on the job, then ask your Heil distributor for complete details about every feature.

R-2

THE HEIL CO.

3003 WEST MONTANA STREET • MILWAUKEE 1, WISCONSIN
DEPARTMENT 343

FACTORIES: MILWAUKEE, WIS., HILLSIDE, N. J.

District Offices: Hillside, Washington, D.C., Atlanta, Cleveland, Milwaukee, Detroit, Chicago, Kansas City, Denver, Dallas, Los Angeles, Seattle.

Nevada's Longest Widening Job

By RAY DAY



1. The first step in the long widening job was to box out a 3-inch-deep strip next to the old mat with a Caterpillar No. 12 grader. The edge was then broomed with a Grace broom, and the base compacted with a 10-ton Buffalo-Springfield roller.



2. This Apsco widener laid the asphaltic concrete in 4-foot ribbons on both sides of the road. Laying from 2 to 2½ miles per day, the machine was within 19 tons of the exact theoretical amount after 12,000 tons were in place.



3. With the widening completed, one-half of the road was covered with a fog coat of 0.1-gallon emulsion. Then a Barber-Greene Finisher laid 2-inch compacted hot-mix 13 feet wide. The mix contained 5½ per cent by weight of 120-150 penetration bitumen.

• WILL the old road hold out a few years longer?

The universal question faced by highway engineers everywhere cropped up in Nevada last fall when U. S. 95, from Las Vegas north 60 miles through the atomic proving-ground area, began to go to pieces. Heavy truck traffic shuttling back and forth to Frenchman and Yucca Flats had begun to break down the sides of the 20-year-old 18-foot road-mixed bituminous highway.

Nevada is never flush with road-building money, so its engineers made a careful examination. The examination disclosed an excellent permanent alignment, mostly straight as a die, through the desert. The old road had been built on an abandoned railroad grade, so the subbase, too, was sound. Special studies showed that the old road was likely to give many more years of service if only a widening and re-

surfacing job was done. The answer was as natural as a seven on Las Vegas' nearby crap tables.

Acting immediately, the whole 57.73-mile stretch was opened for contract bids in what will be the longest widening and resurfacing job ever let in Nevada, and probably in the nation. Carl E. Nelson Co., Logan, Utah, was the low bidder at \$574,185. The job calls for 154,000 tons of plant-mixed asphalt widening material, shoulder buildup, and other allied items necessary to bring the highway to modern 26-foot standards.

Beautiful organization is a feature of this extremely long stretch of widening and resurfacing work. To do it full justice, CONTRACTORS AND ENGINEERS chose a camera instead of words to tell, in these pictures, how the interesting project is being pushed 2,000 feet per day through the winter to 180-day completion.



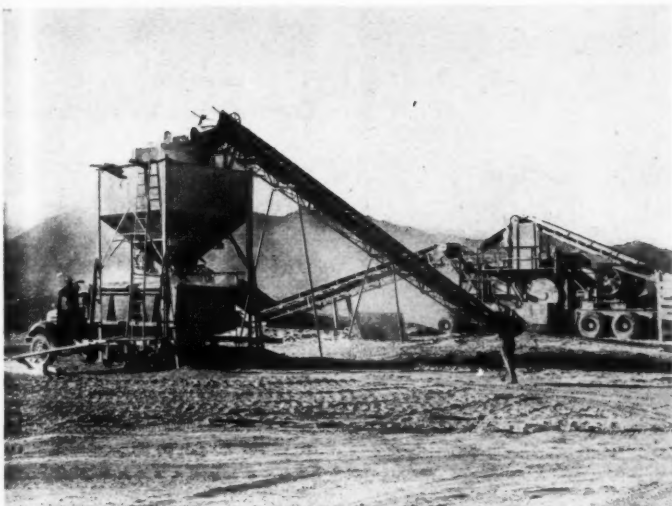
4. These Buffalo-Springfield rollers followed close behind the paver to compact the hot material. The job was organized to allow the hot-mix surface to set at least a half day before taking any traffic.



5. As the final step, this Caterpillar No. 12 motor grader dressed the shoulders. The finished job gave Nevada a modern 26-foot highway built strong enough to stand the increasingly heavy traffic.

(additional photos on following page)

CONTRACTORS AND ENGINEERS



Working on Nevada's longest widening job, this Cedarapids crushing plant turned out 250 tons of processed material per hour from five different locations.



This Cedarapids 3,000-pound asphalt plant was moved to each crusher location. Asphalt delivery involved a 360-mile one-way truck haul.

Highway Program Awards

The National Highway Users Conference announces that henceforth it will present annual awards to highway departments that have prepared the best yearly reports to the public on the status of road systems under their jurisdiction. This announcement coincides with the release of a new NHUC publication, "The People's Business" that points out how clear, concise, businesslike annual reports to the people on current road conditions and planned improvements are not only an aid to public understanding of problems and achievements of the Highway Department, but also are a help in getting public support for sound highway programming.

Albert Bradley, Chairman of NHUC, announced that the association will pay tribute to excellent work already being done by many departments, and it is hoped that both "The People's Business" and the annual awards will stimulate further programs by highway departments.

Stone-Splitting Wedge

A stone splitter for breaking rock and concrete is made by The Geo. F. Smith Co., 5215 Manchester Ave., St. Louis 10, Mo. The tool is a manganese-steel wedge which is driven between two alloy-steel slides that expand in parallel lines against the inner surface of a drilled hole in which they are placed. Expansion of $\frac{5}{8}$ inch splits rock, concrete, or granite. No explosive is used. The stone splitter weighs 6 pounds and measures $13\frac{1}{2}$ inches extended.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 741.

Wheelbarrow Catalog

Literature on wheelbarrows is available from the Buch Mfg. Co., Elizabethtown, Pa. Features of the wheelbarrow include the trays supported by braces in the front for rigidity, and the grommeted or riveted wheel. The company offers 6 types of wheels.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 836.

GENERALS

GO IN - GET THE LOAD - CARRY IT OUT

and OVER THE HIGHWAY

FASTER!

EASIER!

At Less

COST!



"OFF-THE-ROAD"



"ON-THE-ROAD"

General D. T. L. with deep, sharp, angled cleats and sturdy, high shoulder lugs. Designed for maximum traction on soft surfaces—forward or backward.

General H. C. T. for trucks that go off-the-road to pick-up, deliver loads. Free-rolling tread and stronger body for more miles, more safety.

THE
GENERAL
D.T.L.

THE
GENERAL
H.C.T.

Make Every Worn Tire Work Longer for More Profit!

Your GENERAL TIRE DEALER will KRAFT SYSTEM RECAP Worn Tires with the New GENERAL Truck Tire Tread of Your Choice



You're throwing away money when you throw away worn tires or accept an ordinary "adjustment" for them. Let your General Tire Dealer—a tire expert—restore worn tires with famous factory controlled Kraft System Recap-

ping. You choose from the complete line of on and off-the-road new General Tire treads and he'll put that tread on your worn tire. He can do sectional repairs too. Get Kraft System Recapping—get more profit from every tire.

SPECIFY GENERAL TIRES ON YOUR NEW EQUIPMENT

New Undercarriage For Multipurpose Unit

A new undercarriage that will provide better load distribution for the multipurpose Gradall is announced by The Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, Ohio. The carrier distributes the load in reference to the frame so that the entire unit is tip-proof without outriggers.

In addition, the wheel base is 18 per cent shorter for better maneuverability. Wheel base is now 162 inches, carrying a frame 244 1/4 inches in over-all length.

With a chassis weight of 12,550 pounds, the carrier is the heaviest ever to be used for Gradall mounting. Gross vehicle weight is 40,000 pounds.

The engine used in the new undercarriage is a 427-cubic-inch L-head unit developing 140 hp at 2,800 rpm.



The new Gradall carrier is heavier and features a shorter wheel base. The manufacturer stresses that this gives maximum maneuverability.

An oversize radiator is used to insure ample cooling even when running idle at high ambient temperatures. A 13-inch vibration-dampened clutch is incorporated in the design, as are Timken axles and Bendix-Westinghouse air brakes.

The new Gradall carrier is also available, if desired, with a front driving axle in a 6 x 6 model.

Available for the first time as an optional accessory is a remote-control carrier-drive system making

possible one-man operation of the Gradall. By means of push buttons in the upper cab, the operator may actuate a pneumatic-electrical control system which gives him complete control of the carrier. The motor may be started and stopped, the unit driven forward or backward and steered right or left. Thus the operator may spot his carrier as the work proceeds without leaving the Gradall cab.

For further information write to

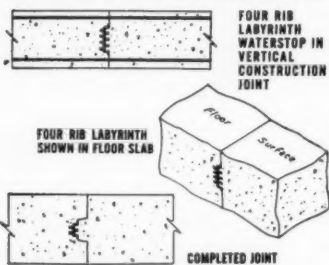
just nail 'em in...
pour your concrete



AND FORGET ABOUT SEEPAGE
WITH LABYRINTH
WATERSTOPS

• Concrete shrinkage can't cause leakage between pours when you're protected by ribbed and grooved polyvinyl plastic Labyrinth Waterstops in the joints. Economical? You bet... No special forms, no metal fins to bend or tear... no maintenance cost, AND...

INSTALLATION COST IS VIRTUALLY ZERO!



WATER SEALS, inc.
9 SOUTH CLINTON STREET
CHICAGO 6, ILLINOIS

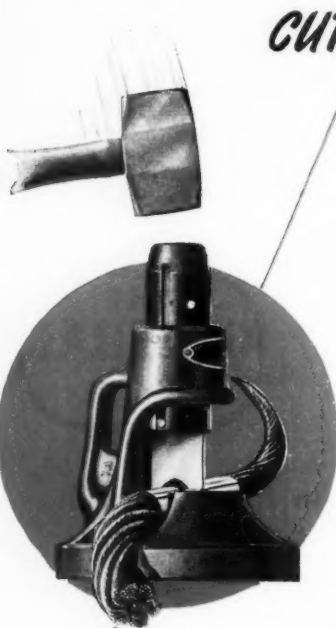
For Further Information and Sample—Clip the Coupon!
Patent applied for

•••••
WATER SEALS, inc.
9 South Clinton St., Chicago 6, Illinois
Send full information and sample.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

Morse-Starrett WIRE ROPE CUTTER

CUTS WIRE ROPE



SEE YOUR
DEALER
OR WRITE
DEPT. "M"

Morse-Starrett Products Company
1204 - 49TH AVENUE, OAKLAND 1, CALIF.

FASTER...

Especially designed cutting blade and dies assures fast cutting action... The hammer principle eliminates any special skill requirements.

CLEANER...

No jagged ends. The wire rope is cut with ends smooth and clean for perfect threading or splicing.

SAFER...

The enclosed cutting blade locked in the body of the cutter assures perfect safety.

and it's

PORTABLE...

Models for tool kit or stationary operation. With cutting capacities up to: 1 inch, 1-1/16 inch, 1 1/2 inch.

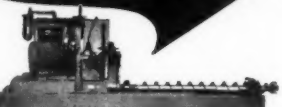
the company, or use the Request Card that is bound in at page 18 Circle No. 819.

Continuous Wire Broom

A steel-wire drag broom 3 inches wide that can be ordered in continuous lengths up to 12 feet is made by the Van Brush Mfg. Co., 327 Southwest Blvd., Kansas City 8, Mo. The Little Peckerwood continuous drag can be used in place of several of the 15-inch-long Unit drag brooms manufactured by the company. The manufacturer points out that use of the Little Peckerwood saves installation time. The broom will fit a standard steel frame but can also be assembled on a home-made frame of 2 x 4's.

For further information write to the company, or use the Request Card at page 18. Circle No. 843.

LEADING CONTRACTORS USE McCarthy Drills



PUBLIC UTILITY AUGER DRILL

Bore holes from 4 1/2" to 24" in diameter under sidewalks, roads, building foundations, railroad tracks, landscaped grounds, etc. Fithian Contracting Co., Youngstown, O., using McCarthy Public Utility Auger Drills, completes pipe line jobs, formerly taking weeks, in a few days.



SELF-PROPELLED HORIZONTAL AUGER DRILL

Will bore 6" and 8" diameter holes 120 feet horizontally at rate of six feet per minute maximum. Four individual, self-locking jacks maintain correct drilling level. In one day a New Castle, Pa., operator bored holes of various depths totaling 840 ft. through shale and sandstone, using this McCarthy Auger Drill.



VERTICAL AUGER DRILL

Operating men who have made actual on-the-job tests find the McCarthy Vertical Auger Drill a standout for mobility, stamina, ruggedness and versatility. On a 2-million dollar, 5-mile stretch of superhighway between Hubbard, Ohio, and Sharon, Pa., The Apex Powder Co., Canton, Ohio, cut blasting costs approximately 20% as compared to air, well or churn drilling. Cutting through two large areas of concentrated rock, 150 holes 15 feet deep were bored for each blasting pattern. 3,000 cubic yards of sand rock were moved at each blast. Due to the ruggedness and mobility of McCarthy Drills, there was no time lost. For further information, write Salem Tool Co. and our distributor will contact you.

THE SALEM TOOL CO.
806 SOUTH ELLSWORTH AVE.
SALEM, OHIO • U.S.A.

DRILLING EQUIPMENT
SINCE 1901

CONTRACTORS AND ENGINEERS

Avoid Legal Pitfalls

When a Contractor Delays Another, Is the Owner or Contractor Liable?

By A. L. H. STREET
Attorney-at-Law

Probably one of the most vexing legal problems confronting contractors deals with their rights when construction is delayed by outside sources over which they may have little or no control. Here is a series of legal cases on this subject, with decisions rendered in six different states: Pennsylvania, New York, Massachusetts, Utah, Oklahoma, and Maryland.

The rights of a delayed contractor are usually affected by special contract provisions, more or less standardized in the different branches of the construction industry.

When Liable for Others' Delays

The best summary of the law on this subject that has come to the writer's attention is to be found in the opinion of the Pennsylvania Supreme Court, in the case of Henry Shenk Co. v. Erie County, 319 Pa. 100, 178 Atl. 662. In leading up to a decision concerning a county's liability for delays in awarding supplemental contracts, the court declared, incidentally:

In construction work, an owner does not generally guarantee or indemnify against loss occasioned by the delays of independent contractors connected with the work, when such delays may be reasonably anticipated. The owner fulfills his duty when he selects as contractor a person generally known as responsible. Where contracts contain a provision against delay of other contractors (or against other incidents of the work providing in substance for no liability on the part of the owner for contractors' delays or changes in the work), such provision includes delays of other contractors in connection with the work, or delays which are covered by the contract, or may be reasonably anticipated from the circumstances attending the project.

The contract in the Pennsylvania case provided: "If the contractor be delayed at any time in the progress of the work by any act or neglect of the owner or the architect, or of any employee of either, or by any other contractor employed by the owner, . . . then the time of completion shall be extended for such reasonable time as the architect shall decide."

Or Only Liable for Own Delays

Another Pennsylvania case was decided by the United States Circuit Court of Appeals, W. G. Cornell Co. v. Schuylkill County, 222 Fed. 876. It involved construction of different parts of a public building by different contractors. One of the contracts contained a provision similar to that quoted above, followed by a clause to the effect that the owner

would provide all labor and materials, not included in his contract, which were essential to conduct of the work, so as not to delay progress. It was also stated that he would reimburse the contractor for loss resulting from failure to provide such labor and materials. The court decided that the owner was not liable for delay in work done by other contractors, observing that it was clear that the owner assumed liability for his own delays in furnishing labor and materials he was required

to furnish. The court noted, however, that the contract was not so worded as to make the owner liable for failure of other contractors "to keep the construction work upon the building ahead of the work contracted to be done by the plaintiff".

The Court of Appeals noted that decisions in an earlier Pennsylvania case and two New York cases, relied upon by the attorneys for contractors, were suits "based upon failure by the owner to do the things which the owner was obliged to do, and not failure by the owner to compel others to do the things which others had undertaken to do".

Extension Must Be Reasonable

A contract to install heating and ventilating equipment in a city school building in New York provided that if the contractor should be delayed by act of the City or another contractor, the time for completion

should be extended for a period equal to the delay. The New York Court of Appeals held that the City could not bind the heating contractor to a 3-year extension of time for performance, due to delays of other contractors. (People v. Craig, 232 N. Y. 125, 133 N. E. 419.) The court said that the contract clause "must be construed as inapplicable to delays so great or so unreasonable that they may fairly be deemed equivalent to an abandonment of the contract".

The New York court upheld a supplementary agreement between the Board of Education and the heating contractor to reimburse the latter for extra expense resulting from delays caused by the other contractors, he having refused to proceed unless so reimbursed.

In another New York case, a contract to erect a bridge superstructure

(Continued on next page)

"For TOUGH JOBS...

No Other Oil can match



Sinclair SUPER TENOL"

... Elvin L. Jones, Supt. of Maintenance
Standard Sand and Silica Company

The Standard Sand and Silica

Company of Davenport, Florida, mines 2,000 tons of sand a day, six days a week. Its products are used in concrete, masonry work and in sandblasting ships, buildings and railroad equipment.

One of the main pieces of equipment is a Super C Tornado dozer. Mr. Elvin L. Jones, Supt. of Maintenance says that "Sinclair SUPER TENOL® is giving superior service in this machine. When it comes to tough jobs . . . there's not another oil on the market that can match SUPER TENOL."

He continues, "SUPER TENOL has also been used in our G.M. 6-71 diesel for 18 months. One third of the time, this machine operated 24 hours a day . . . and we haven't spent a single penny for maintenance."

To find out how Sinclair Products can help you cut maintenance costs and keep production in high gear, call your local Sinclair Representative or write to Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

SINCLAIR SUPER TENOL

... for YOUR Tough Jobs

Avoid Legal Pitfalls —

(Continued from preceding page)

ture exempted the owner from liability for delay caused by another contractor in constructing the substructure, but provided for an extension of time for performance. The Appellate Division of the New York Supreme Court decided that the first contractor had no recourse other than right to an extension of time for completing his job. (Taylor-Fichter Steel Construction Co., 261 App. Div. 288, 25 N. Y. Supp. 2d 437, affirmed by the Court of Appeals, 287 N. Y. 669, 39 N. E. 2d 290.)

A similar decision was rendered by the Utah Supreme Court in a case where a contractor for the erection of a church chapel was held to have no right to damages when delayed

through failure of another contractor to make timely delivery of marble. (Church of Jesus Christ of Latter Day Saints v. Hartford Accident & Indemnity Co., 98 Utah 297, 95 Pac. 2d 736.)

Also in a New York case, a building contractor failed to object to delay by a foundation contractor. The Appellate Division of the Supreme Court declared that this failure to object limited the contractor to an extension of time for performance equal to the period of delay. (Mahoney v. Oxford Realty Co., 118 N. Y. Supp. 216, 133 App. Div. 656.)

See other cases abstracted in notes at pages 815-818, Am. Law Rep. 2d.

Contractor Not Liable to Owner

In a case that arose in Boston, defendant had contracted to install elevator fronts and entrances and an elevator car in plaintiff's apartment house, but was delayed by an-

other contractor's delay. The Massachusetts Supreme Judicial Court decided that defendant was not liable to plaintiff for resulting delay in his performance and was entitled to collect the full contract price. (Boylston Housing Corp. v. O'Toole, 321 Mass. 538, 74 N. E. 2d 288.)

Owner Not Liable to Contractor

In one of the latest cases (1952) bearing on the subject, a contractor, through tardy delivery of pipe by a supplier, was delayed in laying a pipeline. The court decided that, because of a special provision in the construction contract, the pipeline company was not liable to the contractor. (Oklahoma Contracting Co., Inc. v. Magnolia Pipe Line Co., 195 Fed. 2d 391, decided by the United States Court of Appeals, Fifth Circuit.)

In a Maryland case, a railroad contractor consented to an award to

other contractors of part of the work (building a wharf) he had contracted to perform. The Maryland Court of Appeals decided that the railroad contractor could assert no claim against the owner because of delay in building the wharf (Merritt v. Peninsular Construction Co., 91 Md. 453, 46 Atl. 1013.)

Surety Had Prior Claim To Contractor's Proceeds

THE PROBLEM: A bank took an assignment of a Government contractor's claim for pay as security for advances it would make to enable the contractor to perform the contract. The bank knew that the contractor had given his surety an assignment to indemnify it against loss under the suretyship. The contractor defaulted in performance. Under governing Federal statutes, was the Government, as stakeholder of funds

No Damage Here



Cuts Maintenance Costs

50%

... from actual cost records of users

with an OLIVER Hydro-Cut Mower

A pop bottle...a piece of wire...stones...and other roadside debris won't cause excessive damage to an Oliver Hydro-Cut Mower. The hydraulically-operated cutter bar hits with far less impact...protects knife sections, guards, knife heads and pitman drives.

There are only 22 pounds of "metal in motion" behind an Oliver knife...over 100 pounds behind the mechanical mower knife. It is this vastly heavier impact load that causes so much damage

...so much added maintenance cost...so much more down time in the ordinary mower. And, Oliver has an hydraulic safety valve which instantly unloads the force behind the knife when the mower strikes an obstruction.

If you're interested in saving hundreds of dollars of maintenance costs mowing anything from thick matted grass to moderate brush, see Your OLIVER Industrial Distributor about the Hydro-Cut Mower.

THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Illinois

A complete line of industrial wheel



and crawler tractors

"4D"

IS THE REASON
COMPLETE
DOES THE
MOST COMPLETE
DE-WATERING JOB

It's the simple formula that explains why Complete Wellpoint Systems de-water successfully when other methods fail. "D" means diameter of the wellpoint. "4D" means that you get 4" drainage on 1" diameter — the wellpoint's advantage.

The exclusive patented Complete Wellpoint System gives you this 4-to-1 advantage. As part of the Complete System—or as replacements on your present equipment, no other wellpoints can equal this Complete satisfaction. Get all the facts.

Send for Catalog ER...today!

COMPLETE MACHINERY & EQUIPMENT COMPANY, INC.

36-40 11TH STREET
LONG ISLAND CITY, N. Y.

COMPLETE WELLPOINT SYSTEMS

FOR SALE OR RENT

CONTRACTORS AND ENGINEERS

the work
ad con-
Maryland
that the
assert no
cause of
(Merritt
Co., 91

earned by the contractor, bound to pay to the surety out of such funds the amount of its loss before paying the bank anything?

THE ANSWER: Yes. (Royal Indemnity Co. v. United States, 93 Fed. Supp. 891, decided by the United States Court of Claims.)

The court said that although, as against the Government, the assignment to the surety was void, it was enforceable as between the parties to the assignments.

Familiarity With Statutes Is Essential for Bidders

THE PROBLEM: A sanitary-sewer contractor made a deposit to secure entry into a contract if his bid should be accepted. Neither the bid form issued by the sanitary district, nor the plans and specifications, referred to the statute providing for payment in bonds. Could the contractor, on the ground that he expected payment would be made in cash, avoid forfeiture of his deposit by the district?

THE ANSWER: No. (Inyokern Sanitation District v. Haddock-Engineers, Ltd., 224 Pac. 2d 709, decided by the California Supreme Court. For prior opinion, see 215 Pac. 2d 792.)

The Supreme Court reasoned: The basic proceedings under which the improvement was to be constructed showed, as required by statute, that the contract price was to be paid in bonds. There was no requirement that that fact also be shown in the bid form or the plans and specifications. Notices posted at the site and published, and public records, were sufficient to put bidders on guard. Even if the bidder in this case did not see the notices, he was bound to know that he was dealing with a public agency, which could act only after taking statutory steps necessarily controlling any invitation for bids. It would be idle to require an agency to take those steps and yet leave bidders free to disregard statutes and posted and published notices, "and to submit bids upon their own terms without disclosing their secret intentions until after an award has been made in their favor".

Court Defines "Executed"

THE PROBLEM: By a new South Carolina sales and use-tax law, tangible personal property delivered before January 1, 1952, was exempted from tax, under the category of "construction contracts executed prior to April 1, 1951". On March 15, 1951, a construction company was notified that its bid had been accepted, subject to approval by a Regional Office of the Public Housing Authority, and on March 26 that such approval was given. However, a formal contract was not signed until April 2, 1951. Did the exemption apply?

THE ANSWER: Yes. (M. B. Kahn Construction Co. v. Crain, 71 S. E. 2d 503, decided by the South Carolina Supreme Court.)

The decision rests upon reasoning that the facts of the case were such that acceptance of the contractor's bid and giving of a performance bond left nothing else to be done but to sign a formal agreement. (It is to be remembered that acceptance of a

bid and notification thereof does not always constitute a binding contract, particularly when it is understood that a formal contract to be executed will be accompanied by a bond or bonds for payment of labor and material bills and for faithful performance.)

The court also noted that whether "executed," as used in any given sense, means performance of a contract, or the signing and delivery of an agreement, depends upon particular circumstances. (This suggests the importance of drafting documents so clearly as to exclude any doubt as to whether "executed" is to be understood as performance or signing.)

Corporation Burdened by Predecessor's Obligation

THE PROBLEM: A contracting company sued the Government for money claimed under contracts. The company succeeded a partnership which had derived excessive profits. Was the Government entitled to counterclaim because of these profits?

THE ANSWER: Yes. (Franz Equipment Co. v. United States, 105 Fed. Supp. 490, decided by the United States Court of Claims.)

The court said that, as successor to the partnership's rights under the latter's contracts with the Government, the corporation was sub-

ject to the same counterclaim that could have been made against the partnership. This included counterclaim based upon excessive profits under contracts other than those involved in the corporation's claim.

Federal Wage Law Applied To Production of Material

THE PROBLEM: Rock quarries and crushers in Missouri produced materials that were not shipped outside the state but were used in repairing highways carrying interstate traffic and maintaining and building dikes and revetments along the Missouri River to maintain a navigable

(Concluded on next page, col. 3)

Whiteman POWER BUGGIES are doing a TREMENDOUS JOB

ON THE N.J. TURNPIKE!

writes Larry O'Neill, Supt.
c/o Poirier & McLane Corp.



Whiteman Power Buggy on bridge section of New Jersey Turnpike.

Work on New Jersey Turnpike is speeded by Whiteman Power Buggies.

Our Whiteman Power Buggies are tireless workers. All day long they speed along the runways, climb steep grades, squeeze through tight spots and turn on a dime. They're doing a tremendous job, saving valuable time and cutting costs—for the simple reason they carry 13 cu. ft. of concrete at a time, which is equal to 4 hand buggies. For bridge slabs and floors, they are tops.

**Larry O'Neill, Supt.
c/o Poirier & McLane Corp.**

**WHITEMAN MFG. CO., Dept. CE
3249 Casitas Ave., Los Angeles 39, Calif.
Please send prices, literature and name of distributor for: Power Buggy, Screeding Machines, Floating Finishing Machines.**

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

POWER BUGGY • FLOATING & FINISHING MACHINES • SCREEDING MACHINES

CUT YOUR LABOR AND EQUIPMENT COSTS 1/3

with **Surfa-Slick** SELF-HEATING ASPHALT SURFACING IRONS



MODEL A
SURFA-SLICK
Surfacing Iron
for all-around
Hot-Mix work.

INVESTIGATE . . . Controlled, constant, uniform heat, all day long on all your asphalt jobs for **LESS THAN 50¢ A DAY!**

See dealer listed below or write to us today for full information and names of your nearest dealer

SURFA-SLICK DEALERS

Contractors Supply Corp.
44-72 11th St.
Long Island City, New York
Mahoney-Clarke, Inc.
217 Pearl Street
New York 38, New York
Fuchs-Clayton Machinery Company
901 South 40th Street
Omaha, Nebraska
Tyler-Preusser, Inc.
West St. & Boston Post Road
Pelham Manor, New York
Frank D. Messenger
9005 Dixie Highway
Fair Haven, Michigan
F. H. Hopkins & Co., Ltd.
8500 Decarie Blvd.
Montreal, Quebec, Canada

Equipment Rental Company
49th & Grays Avenue
Philadelphia 43, Pennsylvania
Mr. William Oehler
27 Lake Drive
Winter Park, Florida
Distributor for: South Carolina,
North Carolina, Florida, Georgia,
& District of Columbia
Edward R. Bacon Co.
Folsom at 17th Street
San Francisco, California
Reid-Holcomb Co., Inc.
1815 Kentucky Avenue
Indianapolis, Indiana
Powered Equipment Corp.
130 Needham St.
Newton Highlands, Mass.



THE NEW MODEL B
SURFA-SLICK All-weather
Surfacing Iron for
Hot or Cold Mix patching
and repairs.

MANUFACTURED BY
CAMM MANUFACTURING, 1425 FIRST STREET, SAN FERNANDO, CALIF.

Avoid Legal Pitfalls

(Continued from preceding page)

channel. Were the employees engaged in such production entitled to the benefits of the overtime wage provisions of the Federal Fair Labor Standards Act, as being engaged in the production of goods for commerce?

THE ANSWER: Yes. (Tobin, Secretary of Labor v. Johnson, 198 Fed. 2d 130, decided by the United States Court of Appeals, Eighth Circuit, reversing a contrary decision by the United States District Court, Western District of Missouri.)

The Court of Appeals directed that an injunction be directed against defendant employers, having the effect of compelling compliance with the provisions of the Federal statutes.

No Binding Subcontract Resulted From Dealings

THE PROBLEM: As a basis for bidding on a Government job, plaintiff asked defendants to bid for a subcontract on masonry work. Plaintiff was awarded the prime contract on a bid based on defendant's bid, which was the lowest submitted. Plaintiff sent a form of subcontract to defendants for signature. It varied from the terms of their bid by providing for a waiver of claims by defendants as subcontractors, against plaintiff as contractor, and for a \$50 daily penalty for delayed completion. Defendants refused to sign the contract or to proceed. Did plaintiff have a good claim for damages against defendants?

THE ANSWER: No. (R. J. Daum Construction Co. v. Child, 247 Pac. 2d 817, decided by the Utah Supreme Court.)

The court said the plaintiff could have converted defendants' bid into a binding contract by unconditionally accepting it. The acceptance could have been manifested in writing, orally, or by acts. It was not necessary for plaintiff to have signed a contract with the Government, for plaintiff and defendants could have agreed on a subcontract to take effect if and when plaintiff contracted with the Government. But the circumstances indicated that plaintiff was waiting for the prime contract before accepting defendants' bid. Because the written form of contract submitted to defendants by plaintiff introduced new terms and conditions, it was not an acceptance of defendants' bid, but a rejection of it, and amounted to an offer to contract on those terms and conditions.

Equipment Warranty Was Not Implied in Sale

THE PROBLEM: Concrete-construction contractors rented and later bought steel forms, knowing that they would not satisfactorily perform for their purposes without being modified. Was it implied that the lessor-seller warranted adaptability of the forms to the intended use?

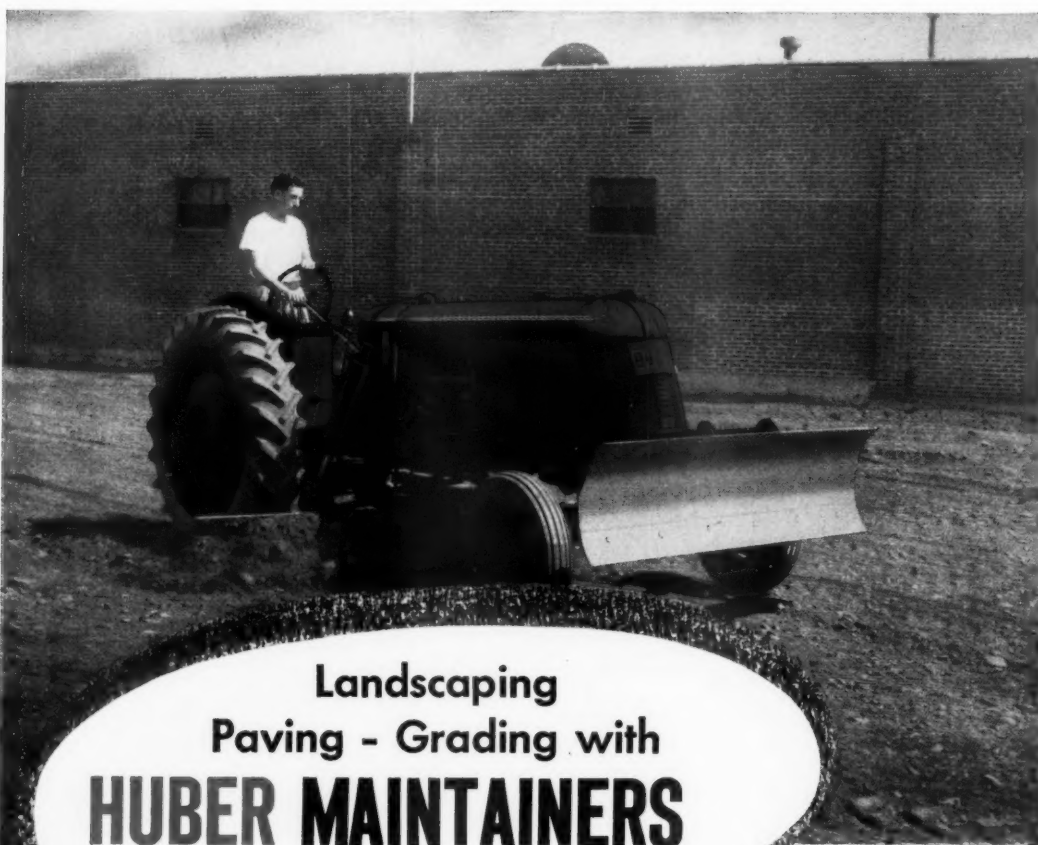
THE ANSWER: No. (Bulldog Concrete Forms & Sales Corp. v. Taylor, 195 Fed. 2d 417, decided by the United States Court of Appeals, Seventh Circuit.)

Hurt By a Backing Truck; Contractor's Liability

THE PROBLEM: A city inspector was injured by a truck backed toward a concrete mixer by a driver who neither sounded a warning nor looked to the rear to see if there was anyone in the path of the truck. Was the driver's employer—a paving contractor—liable?

THE ANSWER: Yes. (Clark v. Gilmore, 57 So. 2d 328, decided by the Mississippi Supreme Court.)

The preceding brief extracts of Court decisions have been edited by A. H. Street, Attorney-at-Law. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.



Landscaping Paving - Grading with **HUBER MAINTAINERS**

Hartford Contractor Keeps Two HUBERS Busy

Service station installations, roadways, parking areas and playgrounds are typical jobs in which the Kessler Construction Company of Hartford, Connecticut, specializes. They serve an area within a 50-mile radius of Hartford.

A pair of Huber Maintainers helps them get work done quickly and efficiently. The Hubers perform a variety of jobs, including rough and finish grading. R. E.

Kessler, who founded the firm in 1940, likes the over-all efficiency of the Hubers.

Let your nearest Huber Distributor give you the facts about this 6,000-lb., 42½ H.P. machine and attachments that enable it to handle nine different kinds of work. Or write us for a free 16-page booklet fully describing the versatile, dependable Maintainer.

HUBER MANUFACTURING CO. • Marion, Ohio, U. S. A.
Manufacturers of Huber Maintainers, Graders and Complete Line of Rollers





Steel Wheel Block Has Curved Surface

A new truck and trailer wheel block is introduced by the Calumet Steel Castings Corp., 1636 Summer St., Hammond, Ind. It has a curved tread plate which is said to give greater contact with the tire and safer distribution of the load. The manufacturer points out that the Casteel safety wheel block has no sharp corners or projecting surfaces to cut or snag tires.

The bottom plate has gripper teeth to keep the block from creeping or slipping and holes so that the block may be nailed down. The block weighs 12 pounds.

For further information write to the company, or use the Request Card at page 18. Circle No. 732.

Booklets on Line of Trucks

Three booklets on the Dodge truck line describe units ranging from the 1/2-ton pickups to 4-ton heavy-duty units.

Five pickup and express models are offered with payload capacities up to 4,250 pounds. The 1/2-ton model is now made on a 116-inch wheelbase as well as on the usual 108-inch wheelbase. Two engines, 97 and 103-hp units, power these light trucks.

The medium-size models with ratings to 2 1/2 tons feature trailer tractor units including cab-over-engine models. Features include use of two carburetors, two intake manifolds, and a fuel-mixture equalizing tube.

The 2 3/4 to 4-ton models have GVW's up to 55,000 pounds. These units are powered by 137 and 145-hp engines. The 4-ton models have a new 171-hp engine.

To obtain this literature write to the Dodge Division, Chrysler Corp., 7900 Jas. Campeau St., Detroit 11, Mich., or use the Request Card at page 18. Circle No. 870.

Booklet on Explosives And Blasting Supplies

A new 58-page booklet covering its complete line of explosives and blasting supplies is available from the Hercules Powder Co., Wilmington, Delaware. It lists the strengths and rates of detonation of nitroglycerin dynamites, ammonia dynamites, and gelatins. Other sections describe special explosives, packaging, detonators, blasting machines, and blasting aids.

A special 3-page list of "Don'ts" has also been included to instruct users in the important safety regulations.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 818.

Rustproofing a Wire Fence

Literature telling how a rust preventive can be applied to a wire fence is available from the Rust-Oleum Corp., 2425 Oakton St., Evanston, Ill. The company has devised a 5-man working system for covering large areas of fence. A long-nap wool roller is used to apply the coating. This product comes in a variety of colors including aluminum and white.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 770.

Barco Moves to Barrington

Barco Mfg. Co., Chicago, Ill., has moved all its business and manufacturing operations into a new plant at 500 N. Hough St., Barrington, Ill., a suburb of Chicago. In the 103,000-square-foot one-story plant Barco

will continue to produce its line of railroad equipment, flexible joints for piping, speed recorders for diesel locomotives, portable gasoline soil

tampers, gasoline-powered hammers, and a line of revolving joints for textile, paper, and other mill equipment.



Need Holes in Concrete?

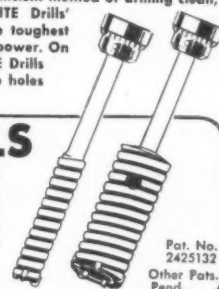
YOU GET MORE HOLES WITH TERMITE DRILLS

Use the fastest, cheapest and most efficient method of drilling clean, accurate holes in masonry. TERMITE Drills' exclusive "WICTU" inserts penetrate toughest masonry at higher speeds with less power. On day-in and day-out drilling TERMITE Drills outlast other drills to give you more holes per dollar.

TERMITE DRILLS

- 41 diameter sizes from 3/16" to 5" (other sizes up to 8" on special order). • Lengths up to 36".
- Exclusive worm design speeds drilling and reduces overheating of drill. • Free Factory Resharpener.
- Use with standard electric drills or air motors.

Write for illustrated catalog and prices today.



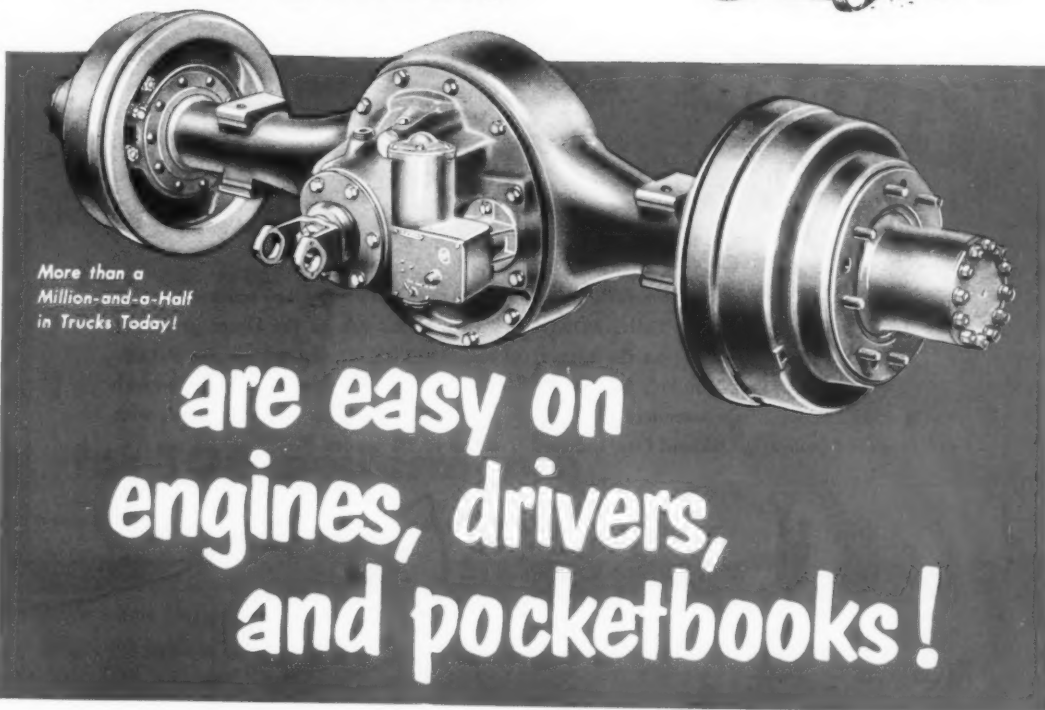
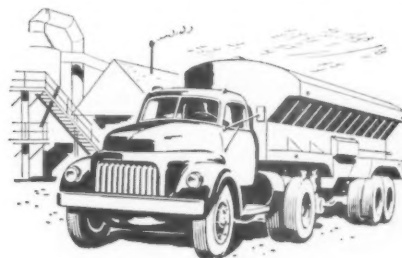
Pat. No. 2425132
Other Pats. Pend.

Sold by leading Distributors in All Principal Cities

TERMITE DRILLS, INC.

87 NORTH LOTUS AVENUE, PASADENA 8, CALIFORNIA

Eaton 2-Speed Axle Trucks



More than a Million-and-a-Half in Trucks Today!

are easy on engines, drivers, and pocketbooks!

The right gear ratio for every situation means engines operate in their lowest-cost speed range. Easy shifting, greater maneuverability, faster get-away with Eaton 2-Speeds—reduce driver fatigue. Quicker full-load trips, longer truck life, less maintenance—mean minimum hauling costs. Have your truck dealer prove it.

EATON

AXLE DIVISION
MANUFACTURING COMPANY
CLEVELAND, OHIO



PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater Defroster Units • Snap Rings • Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

Steel Scaffolding

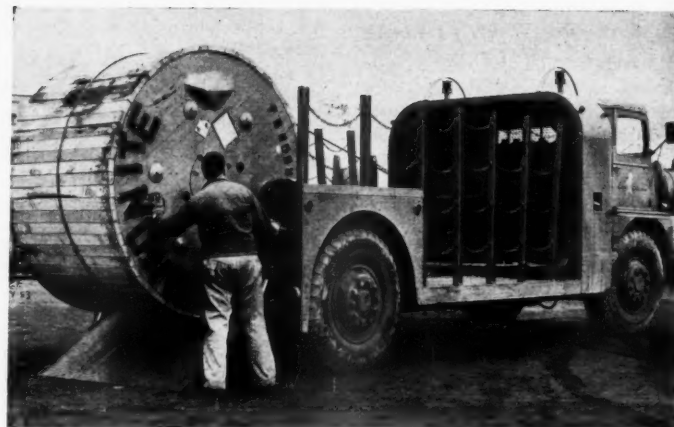
A new lightweight steel scaffolding is announced by the Universal Mfg. Corp., Zelienople, Pa. The Ladscaf scaffolding consists of ladder-type panels locked to horizontal panels by clamps without bolting. Rungs are spaced at 1-foot intervals.

The scaffolding can be mounted on adjustable bases or locking casters. Stabilizers swivel back for passing through narrow aisles in interior work.

For further information write to the company, or use the Request Card at page 18. Circle No. 841.

A Low-Bed Truck

A low-bed truck with a 2-foot platform height is announced by the Walter Motor Truck Co., 1001-19 Irving Ave., Brooklyn 27, N. Y. The platform is 15 feet long and is avail-



The Walter Model CL low-bed truck.

able in 8 and 9-foot widths. The unit can be provided with a hydraulic tailgate and loading ramp.

The Walter model CL is powered

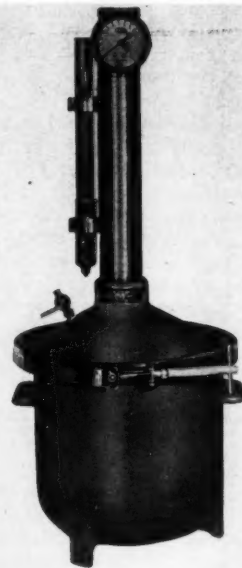
by a Waukesha 125-hp engine and has a 10-ton capacity with a gross vehicle-weight rating of 40,000 pounds. It has front-wheel drive and

hydraulic power steering. The truck uses four 14.00 x 24 tires.

For further information write to the company, or use the Request Card at page 18. Circle No. 811.

Air Measuring Device

An improved indicator for determining the content of entrained air in freshly mixed concrete is announced by Central Scientific Co., 1700 Irving Park Road, Chicago 13, Ill. The Cenco entrained-air indicator is now made of cast-magnesium alloy. The manufacturer points out that magnesium withstands the hard usage of field testing and makes the meter more convenient to carry. The apparatus consists of a round-bottom flanged bowl with a capacity of about



0.22 cubic feet and a cone-shaped cover with rubber gasket and toggle clamp.

The device seals with a V-band coupling which clamps around the periphery of the lid and bowl and is tightened by a large T-screw. The glass scale of the indicator is graduated from 0 to 8 per cent air in 0.1 per cent divisions.

For further information write to the company, or use the Request Card at page 18. Circle No. 839.

How Crushers Are Made

Two models of gyratory crushers, 5 types of jaw crushers, and 3 kinds of crushing rolls are shown in various stages of production in a new booklet issued by the Traylor Engineering & Mfg. Co. The reader is taken through the plant at Allentown, Pa., and learns what principles and skills go into making the machines.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 838.

"Faster Work
Cycles with the

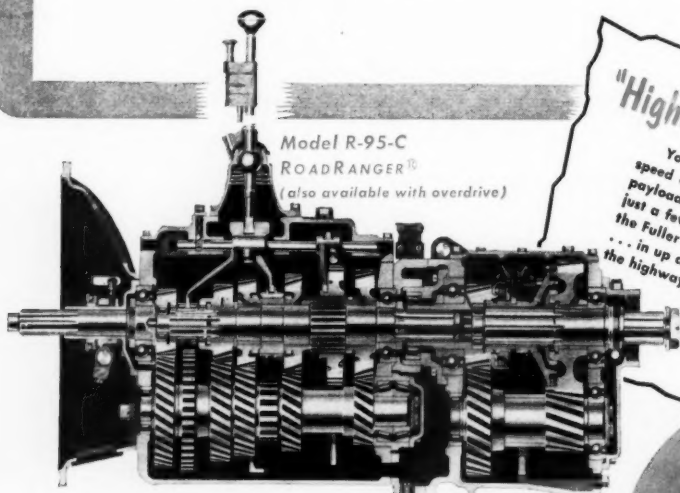
FULLER

ROADRANGER!



"To get the advantage of less shifting and higher speeds we use only Fuller ROADRANGER-equipped trucks on the longer, steeper hauls from our '500-Pit,'" says Henry E. Fitch, General Superintendent of Blackfoot Coal Company, Oakland City, Indiana.

"Standard Fuller 10-speed transmissions do an excellent job on the lesser grades of our '550-Pit' . . . but we use the ROADRANGER units to keep up work cycles with 45-ton-plus loads on the longer haul, with its up to 5% grades."



Model R-95-C
ROADRANGER[®]
(also available with overdrive)

"Higher Average Speed on Grades"

You hear it everywhere . . . "higher average speed on grades . . . less driver fatigue . . . more payload . . . use lighter engines . . ." And that's just a few of the many things they're saying about the Fuller ROADRANGER. North, east, south, west . . . in up and down hauling, in dense traffic . . . on the highway and off . . . fleet operators are turning to the new efficiency of this 10-speeds-with-one-lever transmission.

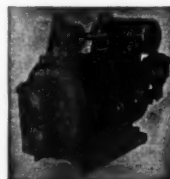
They like the ROADRANGER because of these advantages:

- 1 No gear splitting—10 selective gear ratios, evenly and progressively spaced.
- 2 Easier, quicker shifts—28 steps—one shift lever controls all 10 forward speeds.
- 3 Higher average road speed—engine operates in peak hp range with greater fuel economy.
- 4 Less driver fatigue—1/3 less shifting.
- 5 Range shifts pre-selected—automatic and synchronized.
- 6 More compact than other 10-speeds.
- 7 More cargo on payload axle.

Fuller
TRANSMISSIONS[®]

FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO 13F, MICHIGAN

Unit Drop Forge Division, Milwaukee 1, Wis. • WESTERN DISTRICT OFFICE (SALES & SERVICE—BOTH DIVISIONS), 1040 E. 11th Street, Oakland 6, Calif.



**TWIN
PRIME
PUMPS**

... Better
performance
... Lower cost

DUAL VOLUTES, fast priming, non-clogging portable, long lasting centrifugal pumps. Distributors—write for attractive proposition.

Write for details
OHLER MACHINERY CO.
WATERLOO 5 IOWA

CONTRACTORS AND ENGINEERS

Convention Calendar

April 13-15—Lubrication Engineers

Annual Meeting and Lubrication Exhibit, American Society of Lubrication Engineers, Hotel Statler, Boston, Mass. William P. Youngclaus, Jr., Administrative Secretary, 343 S. Dearborn, Chicago 4, Ill.

April 13-15—South Dakota Short Course

South Dakota Highway Short Course, Student Union Bldg., South Dakota State College, Brookings, S. Dak. Prof. Emory E. Johnson, Civil Engineering Dept., State College Station, S. Dak.

April 22-23—Institute of Steel Construction

Fifth Annual National Engineering Conference, American Institute of Steel Construction, Detroit Engineering Society Bldg., 100 Farnsworth Ave., Detroit, Mich.

April 23-25—Highway Engineers' Association

Forty-fifth Annual Meeting, Highway Engineers' Association of Missouri, Hotel Statler, St. Louis, Mo., J. J. Corbett, Secretary, Care of Missouri Highway Dept. Jefferson City, Mo.

April 27-May 2—Concrete Reinforcing Steel Institute

Annual Meeting, Concrete Reinforcing Steel Institute, Carolina Hotel, Pinehurst, N.C. H. C. Delzell, Managing Director, Concrete Reinforcing Steel Institute, 38 S. Dearborn St., Chicago 3, Ill.

April 28-30—Wood Preservers' Convention

Annual convention, American Wood Preservers' Association, Cleveland Hotel, Cleveland, Ohio. Harry J. Schulte, Hotel Committee Chairman, 20106 Kinsman Road, Cleveland 22, Ohio.

May 18-22—Material-Handling Show

Fifth National Material Handling Institute Exposition, Convention Hall, Philadelphia, Pa. Exposition Management: Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

May 19-21—Ohio Highway Conference

Meeting, Ohio Highway Engineering Conference, Museum, Ohio State University, Columbus, Ohio. Emmett H. Karrer, Brown Hall.

June 15-19—ASCE Meeting

Summer Meeting, American Society of Civil Engineers, Casablanca Hotel, Miami, Fla., Don P. Reynolds, Asst. to Secy., 33 W. 39th St., New York, N. Y.

June 18-20—Professional Engineers Society

Annual Meeting, National Society of Professional Engineers, Sheraton-Beach Hotel, Daytona Beach, Fla. Kenneth E. Trombley, 1121 15th St., NW, Washington 5, D. C.

June 22-26—Engineering Education Society

Annual Meeting, American Society for Engineering Education, University of Florida, Gainesville, Fla. Prof. John C. Reed, Chairman, University of Fla.

July 12-15—Association of County Officials

Meeting, National Association of County Officials, Sheraton Plaza, Boston, Mass. Keith L. Seegmiller, Secretary-Treasurer, 1616 Eye St., N.W., Washington 6, D.C.

Ships Equipment to Aden

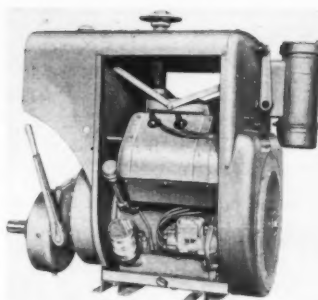
Pioneer Engineering Works, Inc., Minneapolis, Minn., a subsidiary of Poor & Co., Chicago, Ill., recently sent a shipment of 18 carloads of rock-crushing and screening equipment for the Bechtel International Corp., San Francisco, Calif. The \$300,000 shipment was destined for Aden, in the British Protectorate of Aden (Arabia), on the Gulf of Aden.

A plant designed by Pioneer, Anglo-Iranian Oil Co., and Bechtel International engineers in London, England, will be erected in Aden. All basic equipment was manufactured in Minneapolis, and Pioneer will assist Bechtel engineers in its building. The plant will produce aggregate for the new Aden Refinery for the Anglo-Iranian Oil Co.

Air-Cooled Engine

The most recent addition to its line of air-cooled engines is announced by the Wisconsin Motor Corp., 1910 S. 53rd St., Milwaukee 14, Wis. The new Model VG4D 4-cycle V-type 4-cylinder engine develops 36 hp at 2,200 rpm. The manufacturer stresses the engine's light weight and compactness.

Features on this model include tapered roller main bearings, forged crankshaft, mirror finish on crank pins, stellite-faced exhaust valves, valve-seat inserts, exhaust valve rotators, and honed cylinders. For cooling, a large fan cast in the fly-wheel forces air across and around



the cylinders and heads.

For further information write to the company and ask for Bulletin 5-143. Or use the Request Card at page 18. Circle No. 728.

Booklet on Concrete Floors

A booklet on the installation of high-strength concrete floors is offered by the Flash-Stone Co., Inc., 3723 Pulaski Ave., Philadelphia 40, Pa. The text explains the advantages of a low water ratio system over a wet mix system. The company states that in its Dynopak system, forceful impacting places the individual aggregate components in positions of greater stability so that they can withstand impacts better than aggregates of a wet mix.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 829.



you've got to
Swing that Rear-End
for TOP performance

Top performance, no matter what the footing . . . no matter what the job.

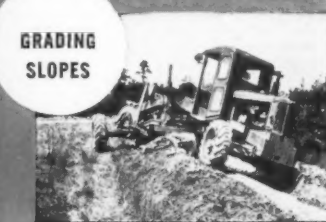
When a ditch is wet, rear steer places the rear truck on the shoulder where the going is good.

When the load is heavy, rear steer places the rear drivers so that they push behind the toe of the blade, while the front drivers pull ahead of the heel. More material is moved, farther and faster.

When there's finishing to be done, rear steer moves the rear wheels off to the side where they won't leave tire marks.

Yes, on job after job, right straight through the year, you've got to SWING THAT REAR-END to get maximum results, and only an Austin-Western Power Grader can swing its rear-end.

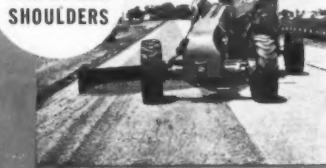
GRADING
SLOPES



MOVING
WINDROWS



FINISHING
SLOPES AND
SHOULDERS



MIXING
BLACKTOP



...handling
many other jobs

Austin-Western
Power Graders
Road Rollers • Motor Sweepers



Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

Construction Equipment Division

CHECK THE RED REQUEST CARD!

For further information on the new equipment, new materials, and new literature described in this issue of *Contractors and Engineers* check the item number on the Red Request Card bound in at page 18. No obligation, of course, and we will forward your request directly to the manufacturer.

CONTRACTORS AND ENGINEERS, 470 Fourth Avenue, New York 16, N. Y.

Hand-Sized Calculator

A booklet describes how a calculator that fits in one hand adds, subtracts, multiplies, divides, cubes, and gives square roots. Instructions and an example explain the operation of the device. According to the manufacturer it has the versatility of

a desk calculator. The booklet pictures and describes in detail the working parts of the 8-ounce machine.

To obtain this literature write to Curta Calculator Co., 3851 W. Madison St., Chicago 24, Ill., or use the Request Card at page 18. Circle No. 751.



a SAFE Bet!

You're sure to win with these easy-wheeling Sterling barrows. Why? Because Sterlings are made to outlast any barrow on the market. Sterlings are engineered and built to take hard punishment, over a long period of years. That's why they cost less. Get the facts. Write for Catalog No. 63A.

STERLING C5W

Maximum capacity 5 cu. ft. 16 gauge tray, all-welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

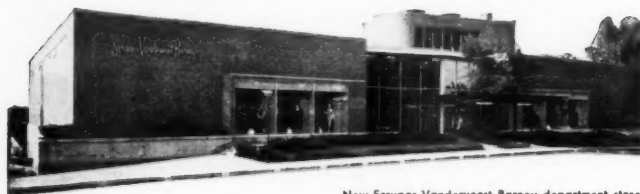


Choice of wood handles or tubular steel frame . . . steel wheel or pneumatic tired wheel.

DEALERS:
Write for Our Non-Exclusive Selling Plan.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of
STERLING Quality



New Scruggs Vandervoort Barney department store in fashionable Clayton, Missouri. Architect: Harris Armstrong. Consulting Engineer: Neal J. Campbell. Contractor: Gamble Construction Co.

QUALITY CONSTRUCTION begins with...

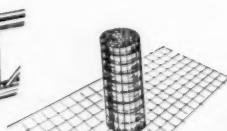


Quality controlled from open hearth to finished product in the modern Laclede Mills, these construction steels offer dependability of quality for your construction needs



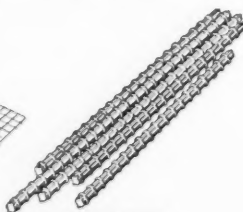
STEEL JOISTS

For strong . . . lightweight . . . economical construction. Spans to 40 feet.



WELDED WIRE FABRIC

Cold drawn, welded automatically . . . in rolls or sheets.



MULTI-RIB ROUND REINFORCING BARS

With Laclede improved design for maximum anchorage . . . and numbered to meet latest ASTM A305 Specifications.

Other Laclede quality construction steels: corrugated centering accessories • spirals • pipe and conduit.



LACLEDE STEEL COMPANY

St. Louis, Mo.



This picture shows some of the Baker-Ross adjustable shores used on the Lawrence, Kans., school job.

Honck Photo

Two-Story Structure For Large School

Steel and Concrete-Frame Structure Features Service Tunnel, Concrete-Slab Floors and Roof

• THE high school under construction in Lawrence, Kans., will provide a modern plant with facilities for teaching everything from Latin and music to shop crafts of almost every kind—machine shop, automotive, farm-implement and tractor, sheet-metal. And due to the 2-story "all-over-the-landscape" layout, the clang of the hammer in one wing will not clash with the slide of the trombone on the other side of the building.

Two-Story—No Basement

In line with the general trend toward horizontal buildings for

schools, the 640 x 400-foot 2-story structure is located on a 1,000 x 900-foot site in the residential section of Lawrence, not far from the main business section.

The frame is steel and concrete, more than half of the roofs are reinforced-concrete slab, and the floors are concrete slab with a hard topping. Exterior walls are brick, and backup and interior walls are built of Haydite block. The only excavation was for a 28 x 30-foot boiler room, but the site required 8,500 yards of fill.

The \$1,800,000 contract was awarded to Constant Construction

GLEDHILL

EARTH MOVERS



Will work with any wheel or small crawler type tractor capable of pulling 2 1/4" plows. Is front dump type scraper. Hydraulic control regulates depth of cut as well as dumping and spreading. Comes in 1 1/4 and 2 1/2 yd. sizes.

WEED SPRAYERS



This far-reaching yet low-pressure sprayer is just the ticket for roadside weed control. Field tested and found not only effective but most economical in operation. Two sizes—completely equipped with 50' hose attachment for hard-to-reach places.

Get complete information on the Gledhill line from our catalog — yours for the asking.

THE GLEDHILL ROAD MACHINERY CO.
GALION, OHIO

CONTRACTORS AND ENGINEERS



This Scoopmobile Model C has been equipped with an extension track providing a vertical lift of 30 feet. A wooden platform carries loaded wheelbarrows to the masons above.
Houch Photo

Co., Lawrence, in the spring of 1952, and the work got under way on March 17 last year. So far it has been marred by two work stoppages, amounting to a total of 4 weeks, one of which was a jurisdictional dispute. Completion date is set for late this fall, with the expectation that the building can be placed in service for the 1954 term.

Filling and Forming

Since the site required a fill of 8,500 cubic yards of specified sandy loam, forms were built for footings, foundations, and a service tunnel around the inside perimeter before the fill to save excavation.

Economy steel forms were used on the footing and foundation forms

and for the service tunnel, which is 5 to 6 feet wide and 4½ feet deep. Continuous around the inside walls, it slopes to a sump drain in the boiler room, which is 10 feet below grade.

The sandy loam was found near the Kansas River, which runs through Lawrence. The fill was hauled to the site in dump trucks. Railroad tie bridges were built over the tunnel and forms. The fill was spread by a D7 Caterpillar with Traxcavator equipment and then compacted by a sheepfoot roller.

The concrete for the footings was 5½-sack transit-mix, supplied by the Ready-Mix Concrete Co., Lawrence, and handled by a combined fleet of Rex and Blaw-Knox 4-yard

and Smith 6-yard mixers. All the concrete was chuted into the forms and vibrated by a Chicago Pneumatic electric Hicycle vibrator. The mixer trucks used the railroad tie bridges when necessary, although most of the forms were easily

reached from outside positions.

With the fill compacted and the columns set, the first floor was poured 5 inches thick with steel-mesh reinforcement 1 inch from the subgrade.

(Concluded on next page)



OVERMAN'S STONE AND BITUMINOUS SPREADER

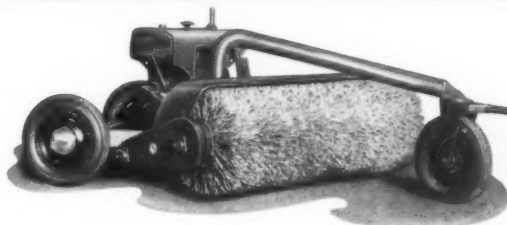
... FASTER
... SMOOTHER

Yes, the new improved model now has several added features that make it better than ever. If you do paving of any kind, no matter how large or small the job, you can't afford to be without this spreader.

Write for descriptive bulletin today

I.J. OVERMAN MFG. CO.
BOX 203 MARION, IND.

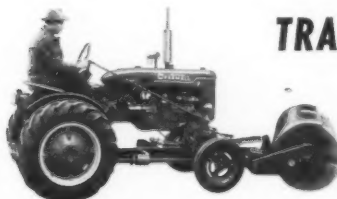
NEW ENGINE POWERED SWEEPER



A new pull type sweeper, engine driven, with many unusual, exclusive features. Main frame of 5" tubular steel, with 5" channel rear frame for rugged strength. 96" x 30" brush, on self-aligning anti-friction bearings, mounted on 3½" tubular frame. Exclusive spring balance permits brush to float over uneven surfaces. Hydraulic control raises and lowers brush. Sweeps at 30° angle, right or left. A sprinkler can be easily attached.

A traction driven model, built along similar design is also available.

TRACTOR MOUNTED SWEEPERS



M-B tractor mounted sweepers are built for various models of Ford, Ferguson, Case and International-Har-

vester tractors. More than 25 years of sweeper experience has been built into these models. Shafts turn on anti-friction bearings and all moving parts are carefully protected. Easily installed and removed. Hydraulically controlled. Sweeps a 6' path, 30° to the right only. Brooms may be disengaged when travelling.



MEILI-BLUMBERG CORP.

NEW HOLSTEIN, WISCONSIN

Graders • Highway Markers • Tractor Accessories



Coffing Safety Pull Ratchet Lever Hoists. 10 roller chain models, ¾ to 15 tons. 2 coil chain models, ¾ and 1½ tons.



Quick-Lift Electric Hoists
Hoist-Alls • Mighty-Midget
Pullers • Spur-Geared
Hoists • Differential Chain
Hoists • Load Binders
J-Beam Trolleys

you play it
SAFE
with
Safety-Pulls

Just as important as the time and labor-saving advantages of Coffing Safety-Pull Ratchet Lever Hoists, is the way each one protects your men from injury, your equipment from damage.

Here's why:

Only the finest steel is selected for each part.

Hooks will not break or straighten out.

Dual ratchet and pawl will not slip — even if handle is accidentally released.

Handle will bend before any other part is overloaded beyond safe limits.

Every Safety-Pull is tested at 100 percent overload.

Write for Bulletin C4SP — and the name of your nearest distributor. Make use of his broad experience and complete facilities.

COFFING HOIST COMPANY
Danville, Illinois

Two Story Structure

(Continued from preceding page)

Service Tunnel

The service tunnel solves the problem of what to do with the pipes and how to service them in the future without tearing down the building.

The outside wall of the building forms the outside wall of the tunnel and the actual pour was one side and a bottom slab. The main floor, which was poured later, completes the covering. The tunnel bottom slab is 3 inches and the wall 4 inches thick. Steel was left projecting from the top to tie into the floor. The tunnel floor was sloped to the boiler room sump to take care of any future leaks, and this is also one point of access. Other access points are located in the floor through steel doors.

To eliminate any future dropping

of the unsupported side of the tunnel floor at the outside wall, a retaining wall 3 inches thick was poured between the bottom of the floor and the top of the main-wall footing.

Columns and Beams

Forms for the columns and beams were made in the carpenter shop, which was equipped with a 16-inch radial Skil saw. Columns range from 10 x 12 inches to 16 x 16 inches.

Concrete was delivered from the mixer truck to a ¾-yard bucket handled by a 22-B Bucyrus-Erie crane for pouring beams and columns. This load limited the boom of the crane to 45 degrees, which in turn limited the reach of the 55-foot boom. By chuting with 3-foot-wide wooden chutes built on the job, the contractor was able to handle all the elevated pours with this one machine. Concrete was poured every

day during the column and beam construction and when necessary spans were bulkheaded off in the centers.

Second Floor and Roof

The second floor and the concrete roof sections were pan-and-joint construction with a 2½-inch slab and a 3-inch joist. The 26-foot-high roof pour was handled by the 22-B Bucyrus-Erie. With the first floor poured the contractor had a good base for shoring up the second-floor forms. At the peak 1,325 Baker-Roos adjustable shores were used. Each had a 3,000-pound capacity.

Concrete Bleachers

The 104 x 80-foot combination auditorium and gym has concrete bleachers down the full length on each side. These consist of 10 rows, 104 feet long, with 12-inch risers

and 26-inch treads. The overhang on this is supported by Baker-Roos shores. Both the auditorium and the shop roofs are steel-deck, with built-up roofing material on top.

Ceilings are varied. In the shop areas they are exposed, while other types are suspended ceilings of plaster on metal lathe and acoustical tile.

There are 169 rooms in the building, counting classrooms, storage rooms, shops, and closets. Corridors have ceramic-tile wainscoting, classroom walls are plastered Haydite, and some exposed partitions are painted Haydite. A typical shop room measures 32 x 43 feet, with exposed ceiling and painted walls. A typical classroom is 22 x 26 feet.

Exterior walls are buff-faced brick with 8-inch Haydite-block backup. Blocks and tile were cut with a Clipper masonry saw.

An interesting feature in handling the mortar for the bricklaying crews was the use of a Scoomobile Model C with a normal lift of 7 feet 9 inches. This was equipped with an extension track which provided a vertical lift of 30 feet. The bucket was removed and a wooden platform substituted. Then loaded hand buggies and wheelbarrows were pushed on and hoisted to second-floor and roof slabs for supplying the masons.

Quantities and Personnel

Fill Borrow	8,500 cu. yds.
Concrete	7,000 cu. yds.
Reinforcing bars	235 tons
Structural steel	275 tons
Reinforcing mesh	174,000 sq. ft.

Prime contractor was the Constant Construction Co., Lawrence, and John Coil was Superintendent. Architect was Griest & Ekdahl, Topeka.



More of what you want in CHEVROLET Advance-Design Trucks

—and here are 4 powerful reasons why:

NEW ENGINE POWER—TEAMED WITH LOWER COSTS! The improved Loadmaster engine with a new high compression ratio of 7.1 to 1, now delivers even more power. This great engine is standard on 5000 and 6000 Series heavy-duty and forward-control models—optional on 4000 Series heavy-duty models. In light- and medium-duty models the Thriftmaster engine offers traditional Chevrolet economy.

NEW STAYING POWER—FOR GREATER DURABILITY! Frames are heavier, stronger, more durable in all 1953 Chevrolet trucks. You'll find greater ruggedness and stamina. You'll find these trucks even brawnier and sturdier than Chevrolet trucks in past years—trucks that have long been famous for those very qualities. And this heavier construction brings new comfort and freedom from fatigue to drivers, too.

NEW BRAKING POWER—FOR QUICKER, SURER, SAFER STOPS! Two types of brakes on 1953 Chevrolet advance-design trucks provide greater stopping power and greater durability. "Torque-Action" brakes are standard front and rear on all trucks up to 4000 Series heavy-duty models. Extra-large "Torque-Action" brakes in front, "Twin-Action" type in rear are on Series 4000, 5000 and 6000 heavy-duty models.

NEW ECONOMY—LOWERS COST OF EVERY TON-MILE HAULED! Expect greater economy with Chevrolet trucks. New and greater stamina with extra gasoline economy cuts operating costs, maintenance costs in heavy-duty models with Loadmaster engine. And these great trucks list for less than comparable models of any other make! Chevrolet Division of General Motors, Detroit 2, Mich.

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

TWO GREAT VALVE-IN-HEAD ENGINES—the Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load. **POWER-JET CARBURETOR**—for smooth, quick acceleration response. **DIAPHRAGM SPRING CLUTCH**—for easy-action engagement. **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **HYPOID REAR AXLE**—for dependability and long life. **TORQUE-ACTION BRAKES**—on light-duty and medium-duty models and on front of heavy-duty models. **TWIN-ACTION REAR BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—for greater holding ability on heavy-duty models. **CAB SEAT**—with double deck springs for complete riding comfort. **VENTI-PANES**—for improved cab ventilation. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—for easier handling. **UNIT-DESIGNED BODIES**—for greater load protection. **ADVANCE-DESIGN STYLING**—for increased comfort and modern appearance.



Timber Firm Opens in N. C.

Timber Structures, Inc., New York, N. Y., has established a district office at 127 W. 7th St., Charlotte, N. C., with B. Wheatley, Jr., as District Manager. The office will serve the Carolinas and areas of Virginia and Tennessee.

NEW IMPROVED! CANCAP automatically protects tractor exhaust systems from damaging rain, sleet and snow . . .

New Wider Opening Action
Allows Unrestricted
Exhaust Gas Escape.

Lightweight Cast
Aluminum Cap
Opens with First
Puff Of Exhaust.

New, Long Wearing
Malleable Iron
Hinge Insert
Built Right Into
Lightweight
Cast Aluminum
Cap.

Cadmium Plated
Locking Screw With
Shakeproof Washer
Insures Longer Life.

PROMPT DELIVERY
At Dealers Or
Order Direct From

Canton Manufacturing Co.
2400-13th St., N.W.
Canton, Ohio



**makers of the
CANTON
TENSION PULL
LOAD BINDER**

3 SIZES TO FIT ALL EXHAUST PIPES FROM 1½" TO 5" O.D.	
NO. 2 CANCAP —fits all exhaust pipes from 1½" to 2½"	\$1.90 ea
NO. 3 CANCAP 2½" to 3½"	\$2.25 ea
NO. 4 CANCAP 3½" to 4½"	\$2.75 ea
NO. 5 CANCAP 4½" to 5"	\$3.75 ea
NO. S-3 CANCAP —fits John Deere A, B, D, G, M. R tractors	\$1.90 ea

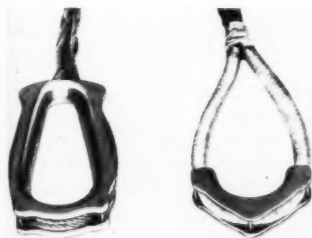
CONTRACTORS AND ENGINEERS



This Mall 2MGV gasoline-engine unit is a self-contained one-man concrete vibrator recommended for narrow-form vibrating from catwalks. It has a 5-ph, 21-pound engine. For further information write to the Mall Tool Co., 7725 S. Chicago Ave., Chicago 19, Ill., or use the Request Card at page 18. Circle No. 886.

New Braided Sling

A new 8-part braided sling has a re-usable thimble fitting attached by pins instead of conventional hammered-down clamps. The manu-



facturer points out that since sling fittings generally outlast the sling itself, substantial savings are gained by their re-use.

For further information write to A. Leschen & Sons Rope Co., 5909 Kennerly Ave., St. Louis 12, Mo., or use the Request Card at page 18. Circle No. 851.

Hoists and Dump Bodies

Literature on hoists and dump bodies is available from A. Cresci & Son, Inc., Boulevard & Grape St., Vineland, N. J. Dump bodies in a variety of types and sizes are shown. This includes two contractor's models and a standard dump body, a sand body, a long low utility model, a hinged-side body, and one with removable sides.

Another bulletin describes the company's line made for light pick-up trucks.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 715.

DRILLING CONTRACTORS

Diamond and Shot Core Borings, Dry Sample Borings, Grout Holes and Pressure Grouting, Foundation Testing for Bridges, Dams and all Heavy Structures

Manufacturers, also, of Diamond Core Drilling Machines and complete accessory equipment, including all types of Diamond Drilling Bits.

Write for Catalog No. 320

SPRAGUE & HENWOOD, INC.
Dept. C, Scranton 2, Pa.

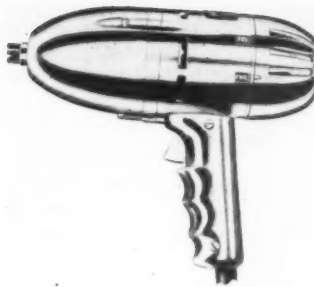
Electric Impact Tool

A new electric impact tool that can be used for removing bolts up to $\frac{3}{8}$ inch in diameter, and for tapping and threading is announced by Syntron Co., 227 Lexington Ave., Homer City, Pa. When the torque load on the drive spindle builds up to a certain point, the rotary action is changed through the impact mechanism into 2,000 blows per minute.

The tool is also recommended for ordinary drilling, reaming, screw-driving or drawing, hole-sawing, wire-brushing, masonry-drilling and wood-boring. The normal clockwise rotation can be changed by turning the rear end cap.

The tool weighs 6 $\frac{3}{4}$ pounds and has a 114-volt ac-dc motor. Accessories including sockets, bits, and chuck adapters are available.

For further information write to



the company, or use the Request Card at page 18. Circle No. 865.

Scoop Shovel in Action

Twelve photographs of a scoop shovel in action are shown in a booklet from The Thew Shovel Co., 28th St. & Fulton Road, Lorain, Ohio. Two models of the shovel for TL-25 machines are seen in a vari-

ety of loading situations handling materials ranging from gravel to boulder debris.

There is also a step-by-step pictorial illustration of the unit's digging cycle. A diagram gives range details.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 864.



Here they come with the pipe now!

10" Jaeger lifts creek over 30' bank



Replacing 3 ordinary 6" pumps previously operated 24 hours a day, one 10" Jaeger "Sure Prime" handled the entire impounded flow of this creek in only 14 hours a day.

The job was performed in a 30' cut in a stream bed being stripped of coal by Ben Construction Co. of Pittsburgh, Pa.

This diesel-powered Jaeger operated for 8 months completely trouble-free, in all kinds of weather, which involved handling storm water as well as normal creek flow.



Note volume of discharge at a point 100' from intake and 30' higher.

Jaeger Pumps pull stronger and pump longer because they are built oversize with larger shells and impellers, have two priming actions, and are generously powered with engines of the highest horse-

power applicable. Prime without vapor lock, sustain efficiency on non-stop pumping, and give thousands of hours more service from pumps and engines.

Dewatering Pumps to 10" • Pressure Pumps to 275 lbs.

See your Jaeger distributor or send for Catalog P-10.

THE JAEGER MACHINE COMPANY
701 Dublin Avenue, Columbus 16, Ohio

AIR COMPRESSORS • CONCRETE MIXERS • TRUCK MIXERS • PAVING MACHINERY

Surveying Instruments

A 16-page booklet illustrates the surveying instruments made by C. L. Berger & Sons, 37 Williams St., Roxbury, Boston 19, Mass. It includes data on the company's transits, levels, theodolites, collimators and alidades.

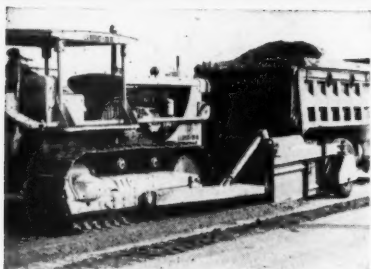
A section devoted to contractors' instruments describes a convertible

transit-level for laying out and measuring horizontal and vertical angles, leveling, measuring difference in elevation, setting building lines and plumbing walls and columns. A 12-inch dumpy level with horizontal circle and vernier is also shown.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 749.

BUILD ROADS, TURNPIKES, and RUNWAYS with a ...

JERSEY SPREADER



Laying gravel sub-grade in preparation for concrete ... Note how spreader is attached to side beams of tractor.

A Jersey Spreader easily handles up to 20 tons per min., $\frac{3}{4}$ in. thru normal macadam range stone in 1 to 12 in. depths, 10 to 13 ft. widths. Mounts on dozer push beams of heavy tractors, trucks feed directly into hopper.

Write or wire for illustrated catalog showing complete details



Laying 2 1/2" stone at large, metropolitan airport. One Jersey Spreader used to lay base for entire job. Any size truck can be used.

TRACTOR SPREADER CO.

HASBROUCK HEIGHTS, N. J.

MANUFACTURER OF THE ... JERSEY SPREADER

IT'S SO EASY... TO MEASURE WITH

Rolatape

For simplified measuring, walking or riding, Rolatape is your best bet! One man operation, releases second man for other important work. Recorded distance easily read at all times. Pays for itself immediately!

MODEL 400: For all roads and cross country measurement. Follows contours, holds true course. Registers over 18 miles. Weighs 5 lbs. Can be used from car.

MODEL 600: For rougher terrain. Ideal for Geophysical, Geological & preliminary survey, field inventories. Weighs 7 lbs.

MODEL 600

\$64.50



10 DAYS FREE TRIAL ON ANY MODEL

ACCURATE FAST SAVES MANPOWER

WRITE DEPT. CE

All prices F.O.B. Santa Monica, Cal.

INSPECTOR'S MODEL 200

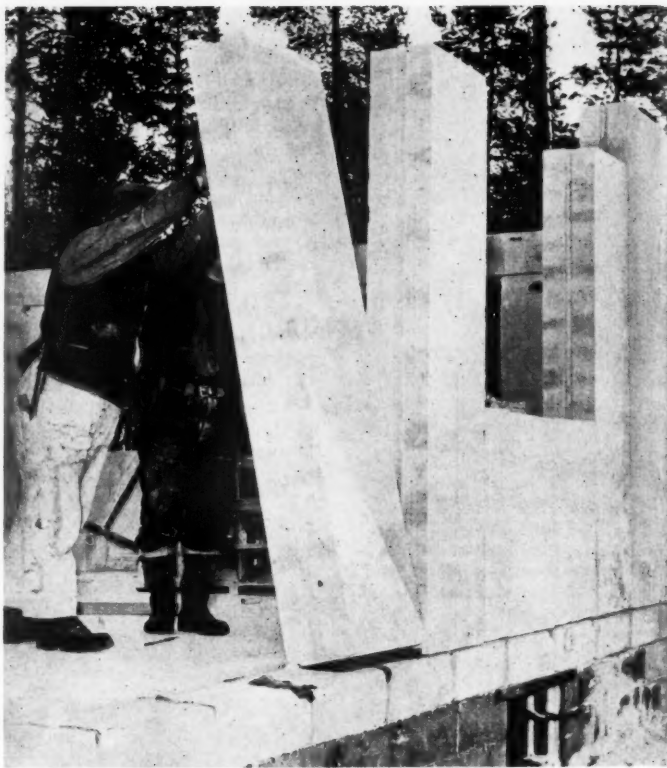
\$27.50

Complete with Carrying Case

For hard surface areas. Weighs 2 1/4 lbs.



Rolatape 1741 14th St., Santa Monica, Calif.



Two men set in place a wall slab of Zeprex 10 x 20 x 102 inches and weighing 350 pounds. This single wall provides all necessary structure and insulation for arctic living.

Structural Material Has Varied Uses

A versatile lightweight mineral building material is being introduced into this country by United States Plywood Corp., Weldwood Bldg., 55 W. 44th St., New York 36, N. Y. Zeprex has many of the uses of concrete in building, but can be sawed, drilled, cut with an axe, and nailed like wood. The material combines the properties of both wood and stone substances. It is strong, yet is one-fifth the weight of concrete. It is incombustible, yet like wood can be bored with a brace and bit, and holds nails securely. It is immune to termites and practically free from shrinking and swelling. In appearance, a Zeprex block or slab has a smooth oyster-white surface

which needs no decoration, but can be painted if desired.

The product has been used in Europe as roof decking, walls, ceilings, and floors of homes, hospitals, and manufacturing plants. It is a structural material that is self-supporting in lengths up to 18 feet and more. Manufactured in slab form, Zeprex comes 20 inches wide and up to 18 feet long. Depending on the desired strength and insulation value, thickness may vary from 2 to 10 inches. As stated, Zeprex is incombustible and is said to have ten times better insulating qualities than concrete, which makes it suitable for use in both Arctic and tropical temperatures.

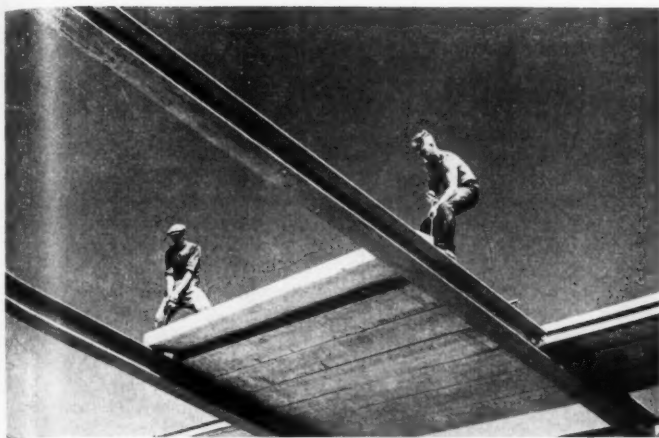
Zeprex is said to absorb only one-third as much water as does brick. This property, combined with its low-heat conductivity, makes it suitable for thermal insulation. To provide the same insulation as a 6-inch slab of Zeprex, a similar 6-inch concrete slab would have to be backed by 3 inches of insulating board. A brick wall 18 inches thick is needed to provide the same insulation as a slab of Zeprex only 6 inches thick.

Zeprex is made of siliceous material, cement and water, together with certain chemicals. The basic component is monocalcium silicate, which has a compressive strength of 200,000 psi at a density of 100 pounds per cubic foot. The special properties of the material are due to its unique structure; a cross-section looks like a minute honeycomb with thousands of tiny spherical cells or pores separated by very thin walls. In spite of the intricate manufacturing process, it is said to be economical to produce.

Zeprex has a great variety of uses, and the density, size, and shape of the product is easily varied to meet the different requirements. It is made in densities varying from 25 to 50 pounds per cubic foot, depending on its use.

Roofing slabs of 30 pounds per

CONTRACTORS AND ENGINEERS



Two men easily lift into place roof slabs of Zeprex. Because of its lightness, Zeprex needs far less steel support than other roofing materials, and supplies full insulation. These 20-inch-wide slabs are mortared together to form a solid, secure roof.

cubic foot density are usually covered with weather-resistant asphalted felt. The slabs are from 3 to 18 feet long, 2 to 8 inches thick, and 20 inches wide. Because of its lightness, Zeprex roofing requires less structural steel.

Used for floor slabs with a density of 30 pounds per cubic foot, Zeprex slabs are laid like wood flooring. The result is a dry-floor installation immediately ready for the application of a decorative floor of tiles, linoleum, and other coverings. In multistory buildings the underside of a Zeprex floor which forms the ceiling, is often left undecorated. Its porous structure absorbs sound and its light color is reflective.

Wall slabs of the material are installed like the roof and floor units. Outside walls may be covered with any commonly used finishing material. These same slabs are suitable for partitions because of their sound-absorbent quality and insulating value.

Zeprex beams that have a density of 40 pounds per cubic foot are steel-rod reinforced. They have been made in lengths up to 40 feet.

The material has also been used for insulation slabs with density of 25 pounds per cubic foot. To insulate concrete walls, Zeprex slabs are placed against the form. When the concrete is poured, the bond is strong enough to keep the slabs securely fixed. The slabs are manufactured in a variety of sizes.

In this country, the United States Plywood Corp. has obtained the exclusive rights to manufacture the product. In order to accelerate the production of Zeprex, U. S. Plywood has acquired the business and assets of National Brick Corp., Long Island City, L. I., N. Y. The new production unit will be known as the National Brick Co., a division of U. S. Plywood Corp.

For further information write to the U. S. Plywood Corp., or use the

Request Card at page 18. Circle No. 871.

Liquid-Filled Tube Level

A liquid-type level consisting of a plastic tube filled with free-flowing anti-freeze is discussed in literature from Levelall, 81 Webster St., Rockland, Mass. The device, called the Levelall, exploits the physical law that water seeks its own level.

When the liquid level at one end of the U-tube is held at the reference point the liquid level at the other end of the tube will be level with the reference point and can be marked off, the booklet points out. It is also possible to extend the level line by sighting across the two liquid levels.

Where the level line to be established is not within a practical working height for use of the instrument, a more convenient level line can be established and measures can be taken up or down to the required elevation.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 856.

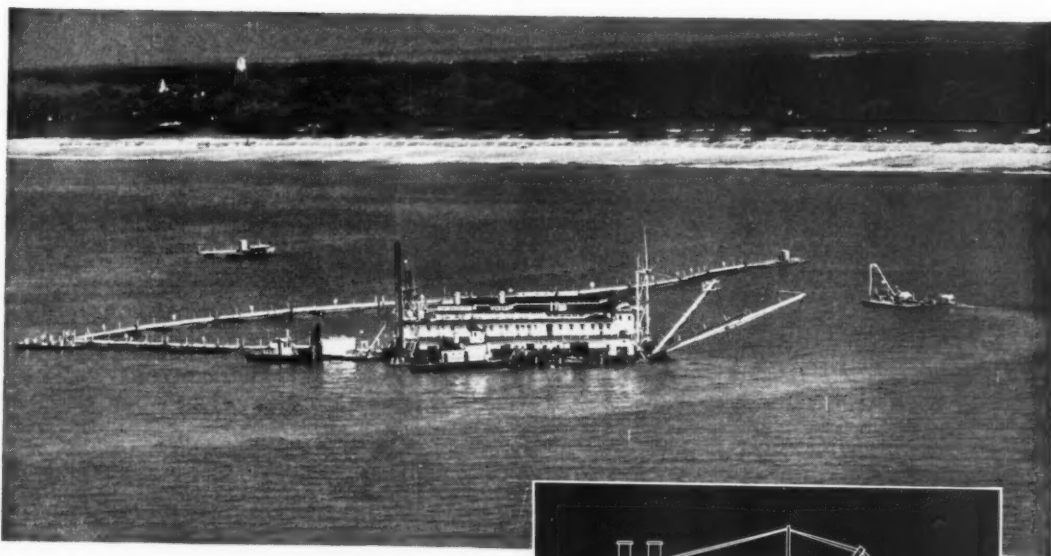
Clay-Products Catalog

A new 98-page booklet on clay products includes data on sewer pipe and fittings, perforated pipe, and channel pipe. Wall coping, flue linings, chimney tops and pots, stove pipe, liner plates, fire brick, fire clay, septic tanks, drain tile, joint compound, and die-cast sewer joints are also discussed.

ASTM and Federal specifications are listed. The booklet is cross-indexed and is intended for use as both a reference and buying guide.

To obtain this literature write to the American Vitrified Products Co., National City Bank Bldg., Cleveland, Ohio, or use the Request Card that is bound in at page 18. Circle No. 849.

What's U. S. Rubber doing to build the world's largest man-made beach?



The dredge which has thus far sucked out over 6 million cubic yards of sand to build the 26-mile long beach from Henderson Point, Miss., to Biloxi, Miss., is equipped with U.S. Matchless® Hose. This tremendous job also includes the pumping of an additional 6 million cubic yards of river silt, sand and mud through this same hose. The sloping bathing beach, when finished, will also provide a defense for the sea wall in abnormally high tides. The "U.S." Hose, acting as a flexible connection between the cutter head and the dredge, is still in good condition and has plenty of service life left, despite its rugged treatment. No matter what your hose problem may be, consult United States Rubber Company.

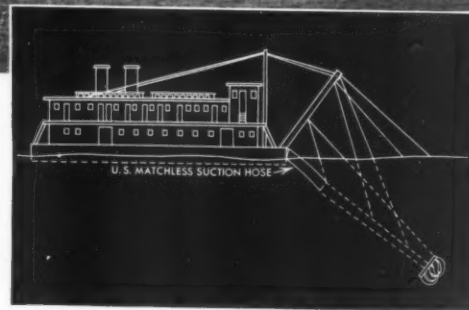


Photo shows dredge pumping sand to make the artificial beach on the Mississippi shore. It extends approximately 1500 feet into the stream. The diagram shows the cutter head which stirs up sand and silt. This in turn is drawn through the pipe, then through the U.S. Matchless Suction Hose to the pump and through the discharge line.

PRODUCT OF

U.S. RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY
MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Vulcan Tools

— FOR —

Rock Drills, Pavement Breakers and Clay Diagraphs

Vulcan Tool Manufacturing Co.

33-43 Liberty Street, Quincy 69, Mass.

Branch Offices and Warehouse Stock.

57 Leonard St. 34 No. Clinton St.

New York 13, N. Y. Chicago 6, Ill.

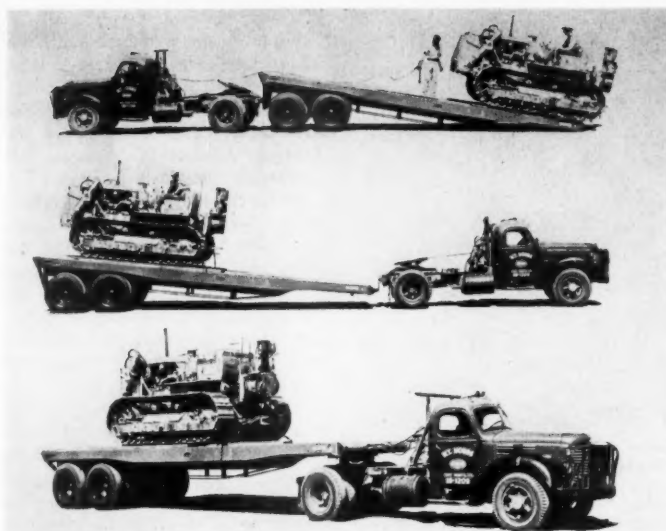
Send for catalog or see your local distributor.

Self-Loading Trailer

A new self-loading trailer is announced by Dorsey Trailers, Elba, Ala. Made in single, double, or triple-axle models, the units have either truss or directly welded sway braces.

The trailer is detached from the truck in order to lower the front end to the ground, creating an inclined platform up which the load can be winched aboard. The truck is backed up against the rear loading bumper while the equipment moves up the deck to the point of balance. Now the truck moves around to the front, winches up the front of the trailer, the fifth wheel is locked, and the equipment moved forward for better load distribution.

For further information write to the company, or use the Request Card bound in at page 18. Circle No. 817.



A Dorsey self-loading trailer in action.

practical pointers... on choosing the right instruments for your job

Now you can choose from *two different lines* of Berger Instruments, the type that best fits your day-to-day surveying needs—from the simplest home and road building to the most exacting first-order surveying projects. For now, Berger makes both moderate-priced Builders and Contractors Instruments and its world-famous Engineers'

Transits, Levels, Alidades, Theodolites and Astronomical Instruments.

Whatever your surveying need, there's a Berger to do it Better—like those illustrated here.

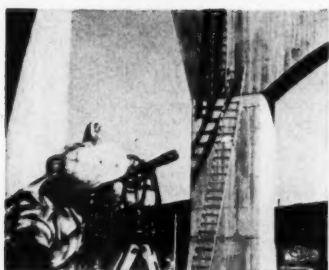
You may have descriptive literature on these and all other Berger Instruments, on request. Write today.



For Roads ... Home Building ... and similar construction ...

laying out and measuring horizontal and vertical angles, leveling, measuring differences in elevation, setting building lines and batter boards, lining up engine beds, plumbing walls and columns, use the sturdily built, moderately priced Berger Convertible Transit-Level. 12-inch erecting-internal focusing hard bronze telescope. Rack and pinion adjustment. 22 power coated optics. Steel spindle. Horizontal and vertical vernier readings to 5 min. Dust-protected axis bearings, leveling, tangent and clamp screws. Mahogany transit case.

Write for details of Berger 12" Dumpty Level and Builders' and Farmers' Service Transit-Level.



For Exacting Assignments ... Highways, Dams, Bridges ...

the Berger Engineers' Transit. Horizontal circle has double opposite verniers reading to minutes, 30 seconds or 20 seconds; verniers are offset to line of sight and provided with reflectors. Protected vertical circle has double vernier. Graduations on Sterling Silver. Erecting-internal focusing telescope. Smooth-acting leveling and tangent screws; level vials readily visible. Large bearing areas on centers and clamps. "R" type equipped with compass, yoke standard and wye bearings.

Write for "Accuracy in Action" describing other Berger Transits; Dumpty, Wye, and Precise Levels; Up- and Down-sighting Vertical Collimators; Jig Collimators; Alidades; Mining and Astronomical Instruments.



For Contractor's Field Office — Complete Drafting Kit ...

New Berger Drafting Kit combines all necessary drafting instruments and supplies in one easy-to-carry case. It includes your choice of complete 14-piece professional type drawing set or master bow pencil or interchangeable bow with ruling pen—all in velvet-lined case—plus protractor, architect's scale, engineer's scale, 8" and 10" triangles, French curve, draftsman's tape, pencils, pencil pointers and erasers. Inner compartments hold drawing and note papers—all in attractive, durable, 16" x 24" simulated leather zippered carrying case of scuffproof, waterproof Texon—with slide-in type handles.

Ideal for field or office use—and at home, too. Issue it, get it back intact. No lost or strayed equipment. Write for prices.

C. L. BERGER & SONS, INC., 37 WILLIAMS STREET, BOSTON 19, MASS.

Engineers' Transits
Builders' Instruments
Levels
Alidades
Theodolites

THE BEST IN SIGHT IS

BERGER
ENGINEERING AND SURVEYING INSTRUMENTS ... SINCE 1871

Construction Equipment Is Decontrolled

As from March 12 the majority of construction machinery and allied equipment has been decontrolled. This includes all construction, mining, quarrying, oil-well and oil-field machinery, engines, air compressors, air tools and pumps, spare parts, accessories, and attachments.

Everything under CPR 30 is now decontrolled, with the exception of cutting tools designed for use with or on machine tools, and machine tools themselves, new or used, and their attachments and parts. Abrasives, grinding wheels, and buffing wheels do not come under the head of cutting-tool parts.

Window and Door Lintel

A new window and door lintel made by Brainard Steel Division of Sharon Steel Corp., Warren, Ohio, has a rib construction that prevents wall-drainage contact with the sash and provides space for a solid bed of mortar. No tuck pointing is necessary, according to the manufacturer.



The lintel is available in two gages and in sizes from 2 feet to 7 feet 6 inches.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 778.



**Servicised
CORK
JOINT
FILLER**

• COMPRESSIBLE-
NON-EXTRUDING
• 95% RECOVERY
AFTER
COMPRESSION

Ideal for joint filling in flood walls, outlet works and spillways, sewage treatment plants, etc. Cork Joint Filler keeps joint filled at all times. Light color does not mar appearance of exposed concrete.

Write for details on Cork Joint Filler and the complete line of Serviced Asphalt, Cork and Rubber Composition Joint Fillers.

SERVICISED PRODUCTS CORP.
6051 W. 55TH ST. • CHICAGO 38

CONTRACTORS AND ENGINEERS

Dredge Enlarges Canal For Power Project

Forty Million Yards of Clay and Boulders Are Excavated By 36-inch Hydraulic Dredge for Hydroelectric Plant

• A LARGE construction project now under way in Canada is the expansion of the Beauharnois powerhouse on the St. Lawrence River above Montreal in the province of Quebec. When completed, the hydroelectric station will have a capacity in excess of 2,000,000 hp—one of the greatest in the world. It is owned by the Quebec Hydro-Electric Commission, which controls the Beauharnois Light, Heat & Power Co., a private company that began the venture back in 1929. The project is about two-thirds finished.

The location takes advantage of an 83-foot difference in elevation between two lakes connected by a canal that will become a ship channel in the St. Lawrence Seaway. A lock will be constructed at a dam in the canal which is 15 miles long and eventually will divert practically the entire flow of the river. The canal began with a pilot cut, excavated by dragline, and when flotation was obtained the excavators were replaced by two dredges—one a hydraulic rig with pipeline discharge, and the other a dipper dredge that disposed of its material through a crushing and pumping unit mounted on a scow.

The capacity of these two dredges was insufficient for the widening and deepening of the canal which is to provide the necessary volume of water to operate the expanding facilities of the hydroelectric project. Eventually the 15-mile canal will be 3,300 feet in width, and will contain a navigation channel 600 feet wide x 27 feet deep. Consequently,

the Beauharnois Light, Heat & Power Co. contracted with the Ellicott Machine Corp. of Baltimore, Md., to design and build a hydraulic-pipeline dredge of sufficient power and size to handle the big canal job.

Dredge Hydro-Quebec

Less than 21 months were needed to build the dredge. The contract (Continued on next page)



The Hydro-Quebec is towed backward from the shipyard at Sorel, Quebec, to the Beauharnois Canal. The sponson sides have been removed for easy passage through the canals, and the ladder and cutter head have not been installed.

*these counties
are moving the
cheapest dirt on earth!*

Domor Elevating Graders with Caterpillar Motor
Graders are building low-cost roads for counties and contractors all over the world. One machine with one operator digs, conveys and places the material.

The story on Domor Elevating Graders is this simple—figure the yardage possibilities out for yourself. The disk cuts 22 inches deep—16 inches wide—and travel speed in second gear is approximately 3 miles per hour.



Ulrich Products

CORPORATION

ROANOKE, ILLINOIS



HOCKLEY COUNTY, TEXAS



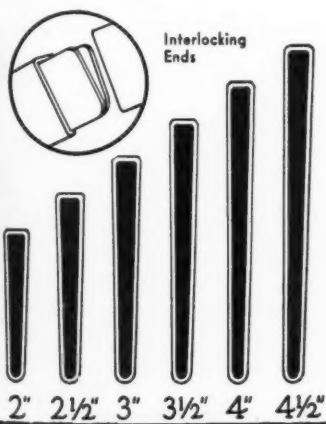
POWESHIK COUNTY, IOWA



YUMA COUNTY, COLORADO



GLACIER COUNTY, MONTANA



Cut your PAVING COSTS

with our tapered steel
Contraction Joint
Forms. Most
Sizes in stock.
Sample on
request.

Use our
Pave-Templates
For straighter and
more economical joint
placement, models for either
steel or Mastic Strips. Satisfac-
tion guaranteed. Details on request

Wheeler
PAVING ACCESSORIES CO.
930 So. Josephine
Denver 9, Colo.

Phone PEarl 9006

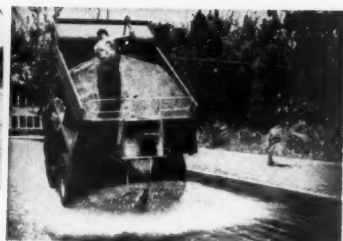
APRIL, 1953



MODEL W HIGHWAY SPREAD-ALL

The above shows the Model W Hi-Way Spread-All which has recently been developed and has gone through many actual tests in the past year. Today we feel it is by far the most outstanding spreader of its kind on the market; the entire mechanism can be driven from an auxiliary gasoline engine, or from the power take-off on the truck, or through a V-belt drive on the drive shaft of the truck. It is available in different sizes to fit all of the different lengths of trucks. The clutches to throw the mechanism in and out of gear are controlled from within the cab by either vacuum or air controls, and the feedgate adjusting the amount of material to be spread is controlled from the cab of the truck, thus making this a one-man-unit. Notice the streamlined appearance.

Sold by leading distributors throughout the U.S., Canada and many foreign countries



MODEL DD TAILGATE SPREADER

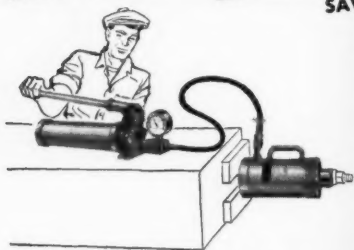
Here is the economical all-purpose, all-weather Spreader—used in the summer for dust control and for seal coating, and in the winter for spreading sand, cinders or rock salt on icy pavements.

Model DD fits any standard dump truck body and can be attached or detached in one minute. It gives a uniform spread 4 to 60 feet wide, at 1 to 35 miles per hour. Model DD will give you years of economical, trouble-free service.

HIGHWAY EQUIPMENT COMPANY, INC. CEDAR RAPIDS, IOWA, U. S. A.
MANUFACTURERS OF THE WORLD'S MOST COMPLETE LINE OF SPREADERS

Simplifies PULLING!

LESS RIGGING NEEDED! LESS SET-UP TIME! SAVE THE TOOL COST ON ONE JOB!



CONSTRUCTION JOBS FOR RE-MO-TROL

- | | |
|--|-----------------------------------|
| Pre-stress concrete | Lift and align beams |
| Shoring applications | General maintenance |
| Force flooring and sections into place | Test load bearing ability of soil |
| Lift mobile equipment | Straighten buckets and forms |

The New SIMPLEX Re-Mo-Trol Hydraulic Pumps and Remote Controlled Rams "Center-Hole"* PULLERS

The only remote control puller offering this time and work saving advantage! Just insert a pull rod or screw through the tubular ram plunger and secure it to the object to be pulled. Rod is drawn through as plunger extends, in a direct-line pull. No complicated rigging. Ram is its own back-up. Sketch shows typical use removing sleeve.

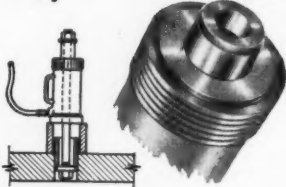
PUMPS AND RAMS *Interchangeable*

Two pumps—seven rams. Smaller pump handles all Rams up to 30 tons capacity, larger pump handles any Re-Mo-Trol Ram. You can buy only the units you actually need!

Simplex LEVER · SCREW · HYDRAULIC Jacks

TEMPLETON, KENLY & CO. • 1002 S. Central Ave., Chicago 4, Ill.

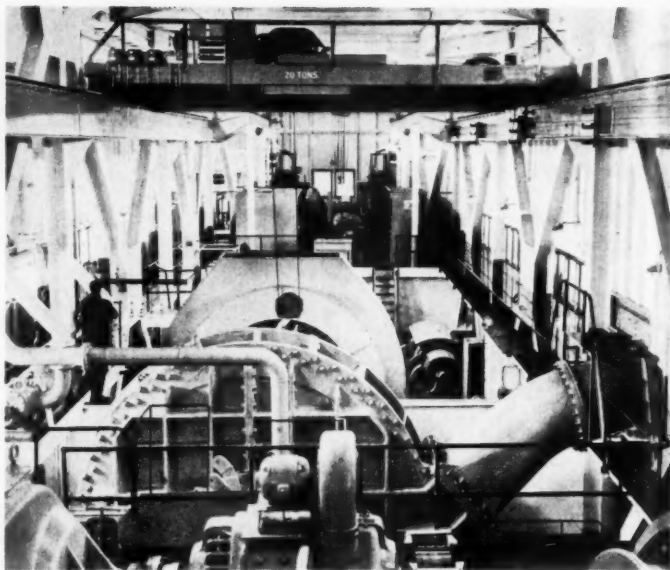
Exclusive "Center-Hole" Speeds the Job!



If it can be pulled, Re-Mo-Trol can pull it easier! Pulls gears—wheels—pinions—axles—shafts—sleeves—liners—studs. Operates as shown with center pulling screw, or pull rods and bracket. Or use it for any kind of conventional lifting or pressing job. Seven complete units—10 to 100 tons capacity.

*On Rams of 30-tons or greater capacity

Write for
Bulletin: Hydraulic 51
for full information



Here is an interior view of the dredge with the giant Ellicott single-suction centrifugal pump in the foreground. Main motor and switch panels are to the rear.

Dredge Enlarges Canal For Power Project

(Continued from preceding page)

was signed on March 30, 1951, and by the middle of December, 1952, the new dredge, christened Hydro-Quebec, was working for its owner. It is now engaged in the removal of some 40,000,000 cubic yards of material from the bed of the Beauharnois Canal. Without resorting to blasting, the dredge is digging boulder clay—a heavy sticky type of marine clay laced with glacial boulders, which is difficult both to excavate and to transport hydraulically. Some of the boulders weigh as much as 1,000 pounds, but are passed right through the 36-inch dredge pump.

Marine Industries Ltd. of Sorel, Quebec, constructed the hull and spuds, and handled the assembly of the big rig. The hull is of welded steel—280 feet long x 58 feet wide x 15 feet deep—with a maximum draft of 9 feet. The dredge has a total

displacement of 2,500 long tons. Its hull is designed so that its width can be reduced by the removal of side sponsons to allow passage through canal locks.

Structural steel trusses, on each side of the center hull section, run the entire length of the hull from the ladder well to the stern of the dredge. The trusses strengthen and stiffen the hull. The structural-steel spud frame at the stern also ties into and forms part of the hull truss framework. At the bow a structural-steel A-frame extends forward of the hull, and carries the sheaves for the ladder-hoisting arrangement. The ladder weighs 375 tons, is 85 feet long, and mounts a 26-ton rotating cutter head at the front end. The cutter head has spiral blades with renewable teeth.

Digs to 50 Feet

The Hydro-Quebec has a maximum digging depth of 50 feet. Its main dredging pump is of a special, heavy-duty, centrifugal, single-suction type, and is completely lined

NOTHING ELSE LIKE AMAZING NEW

MEAD "MIGHTY MOUSE" BABY DOZER and TRACTOR

USEFUL FOR:
Estate Owner, Land-
scaper, Municipalities,
Street and Park De-
partments, Contrac-
tors, Project Engi-
neers, Cemeteries,
Sub-Dividers, In-
stitutions.
Write for
FREE Cir-
cular.

HIGH LIFT &
LOW LIFT
MODELS

Mead's MIGHTY MOUSE High Lift Tractor-Dozer pivots within its own length. Weighs only 1300 lbs. yet does and hydraulically lifts a 5 cubic foot capacity bucket up to 6 feet!

Machine only 40 1/2" wide, 95" long, 2 speeds forward and one reverse, 6 hp. engine. Front end attachments are bucket, dozer blade, mower or rotary broom; rear end pulls rotary tiller, cultivator, plow, scarifier etc.

It's a perfect answer to so many labor problems that we'd like to show you how it will do a dozen jobs wherever you have grading, excavating, back filling, razing, loading, snow plowing, brush removal, site clearing, road building and you think of the rest! Hydraulic lift, just like the big ones.



IT GRADES: Large tread area, "geared to the ground," gives lots of traction for a heavy thrust. You can really push things around with "Mighty Mouse!"

IT CARRIES: Easily carries heavy loads, piles material high, climbs steep slopes.

IT DUMPS: Bucket trip lever at driver's left hand dumps load instantly, effortlessly, exactly where needed.

IT BACKFILLS: "Mighty Mouse" can save pay its cost on this work alone, doing the work of many laborers and eliminating rental of heavy machines.

MEAD SPECIALTIES COMPANY, Dept. T-643, 4114 No. Knox Ave., Chicago 41, Illinois

CONTRACTORS AND ENGINEERS

with special-alloy abrasion-resistant steel. The intake or suction line at the pump is arranged with a quick-opening, bottom-drop, clean-out cover pneumatically operated to facilitate cleanout operations with minimum delay. Through a 36-inch-diameter pipeline, up to 2,000 feet long, the dredge pumps material to spoil areas along the banks of the canal.

The dredge is electrically powered with current supplied from shore by submarine cable direct from the plant of the Beauharnois Light, Heat & Power Co. at 13,800 volts, 3-phase, 60-cycle. The dredge pump motor is operated directly off the 13,800-volt line. Three 600 kva transformers deliver current at 2,400 volts to the cutter motor generator set, and to the hauling and hoisting machinery motor generator set, while a fourth transformer delivers current at 600 volts to an auxiliary power-distribution switchboard. In addition to this a 125-kw generator set, driven by a diesel engine, is provided to supply emergency current for operating various auxiliaries and the lighting system, and also for raising the ladder and spuds at reduced speed in the event that power from the shore is disconnected. Lighting equipment is installed to provide adequate illumination for all machinery spaces and compartments. Floodlights are placed at the bow and stern to provide abundant illumination for the operator to see the spuds and dredging ladder during night work.

Speed control of the dredging pump is accomplished at constant torque by means of a liquid slip regulator. Speed control of the cutter is by a combination of variable voltage and amplyne motor control.

The dredge does not have sleeping accommodations for the complete crew. However, a steel upper-deck house is provided in which there are three staterooms and offices, a washroom, and a utility room for officers. In addition, there is another washroom for the crew on the main deck.

A raised lever room is fitted out with modern types of controls and



The dredge Hydro-Quebec at work just off the St. Lawrence River in the Beauharnois Canal. The canal when dredged will be 15 miles long and 3,300 feet wide. It will divert practically the entire flow of the river.

operating equipment. From this vantage point the operator can control the dredge pump motor, the cutter motor, and the winch motors, as well as the pneumatic controls for the clutches and brakes of the various winch units. All controls are centrally located on a control stand within easy reach of the operator. Dredge pump vacuum and pressure gages, both indicating and recording, as well as instruments to show electric inputs to various motors and motor speeds, are also located in the lever room. All operations of the dredge are directed by telephone, radio, or signals from the lever room, where the operator has clear visibility in all directions.

New Allis-Chalmers Line

Allis-Chalmers, Tractor Division, Milwaukee, Wis., has recently produced a new line of 4-wheel scrapers to fit crawler tractors. It includes seven models with struck capacities ranging from 2 to 18 cubic yards.

The line is available due to the integration of four of Allis-Chalmers' own models and three by Gar Wood.



JACKSON VIBRATORY COMPACTOR

RAPIDLY CONSOLIDATES

PIPE LINE BACKFILL

TO SPECIFIED DENSITY

Result — pipe line is uniformly supported by compacted soil and top of trench stays to finished grade. This manually-guided, self-propelling Jackson Compactor will compact granular soils at optimum moisture to specified density in depths of 8" to 12" at the rate of 2,400 sq. ft. per hour. It is available with quickly interchangeable bases of 12" to 24" and is equally advantageous for blacktop pavement widening and patching — paving drives, walks, etc. Operated from Jackson Power Plant mounted on auto trailer with quick pick-up of Compactor. For rent or sale at your Jackson Distributor. Write for details.

JACKSON HANDIEST, MOST PRODUCTIVE SCREED ON THE MARKET

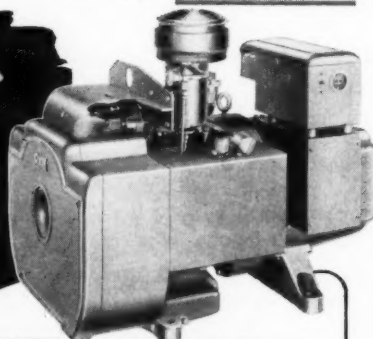
For the tight spots or just straight-away paving you will find the Jackson Electric Vibratory Screed the fastest, most convenient and efficient screed you have ever used. It strikes off to any crown, undercuts at curb or sideform, works up to and around all obstructions. It permits pouring slabs up to 30' without center joint. Requires only two men on widest slab and is the only screed that can be rolled back for second passes on 4 rollers. Powered by Jackson Portable Power Plant. For rent or for sale at your Jackson Distributor. Details on request.



JACKSON VIBRATORS, Inc.
LUDINGTON, MICHIGAN

Take a good look at this New Powerhouse*!

THE ONAN "CW" *ELECTRIC PLANT
5,000 or 10,000 watts



LOWEST COST per kilowatt, HIGHEST OUTPUT per pound, MOST COMPACT!

For any use . . . standby, mobile, portable or stationary, the new Onan 5CW and 10CW give you top performance and value! Here, for the first time, are 5 and 10KW electric plants powered by engines designed and built by Onan exclusively for electric plant use.

Both engines are 1800 R.P.M. Weigh less and are much more compact than general-purpose engines. Two-cylinder, alternate-firing design. New vacuum air cooling. High-tension magneto ignition. Standard voltages 60-cycle A.C.

Far Out Front
IN DESIGN AND ENGINEERING

- Twin-cylinder opposed engines
- Aluminum alloy cylinder heads
- Extra-large bearings
- Excellent accessibility
- Pressure lubrication
- High performance generators
- Completely equipped with controls, instruments

Write for folder and specifications
D. W. ONAN & SONS INC.



7478 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINNESOTA

Portrait of a Road

A full-length panoramic portrait of a highway is painted by George R. Stewart in "U. S. 40, Cross Section of the United States of America" (Houghton Mifflin Co., Boston, Mass., \$5.00).

Mr. Stewart's clear interesting text and the 92 photographs which he himself took give a portrait at once interpretative, analytical, and factual. U. S. 40—the highway as well as the book—is as American as a coonskin cap. Indian paths, colonial portage routes, post roads, turnpikes, national highways, western trails, finally blended by mid-twentieth-century bulldozers and

cement, constitute its roadbed. At times spreading into six lanes, at others contracting into 2-lane stretches, U. S. 40 bisects the continent from the Atlantic Ocean to the Pacific, and traverses 300 years of history as well as over 3,000 miles of space, from Atlantic City, N. J., to San Francisco, Calif. Mr. Stewart makes the history come alive and the geography, topography, and geology understandable.

As one rolls along the eastern section of the highway on what Mr. Stewart refers to as a personally conducted tour, one becomes aware that here young Mr. Washington rode; there Daniel Boone blazed the way; and under those very trees columns

of Blue and Grey figures marched and counter-marched. Then covered wagons rolled west. The 49'ers left their mark. The ranchers, the cattlemen, the oil operators all helped to make U. S. 40 what it is. Linking such cities as Baltimore, Wheeling, St. Louis, Kansas City, Denver, Salt Lake City, and San Francisco (perhaps Reno should also be mentioned), in its sweep across 14 states, U. S. 40 has played its part in the commerce of the country. It is easy to conclude from the facts Mr. Stewart unfurls in his own brand of cinerama that the value of this highway could indeed be well over several hundred million dollars.

Mr. Stewart disclaims intention of

creating a romantic or picturesque travelogue in his cross-country tour. He points out the defects along with the assets. The reader feels the need to campaign against the disfiguring billboards. He becomes aware of the waste places of the desert, and the blind spots of city slums, as well as the vastness of the farm lands, the majesty of mountains and forests, and the variety of industry. There is ample technical information on the physical aspects of the highway from New Jersey to California, and one concise chapter on modern road-making.

In conclusion, Mr. Stewart raises some important questions in his "Reflections", which form the final chapter of the book:

"Is not this heritage now at its full peak of production, ready to decline? Has not the soil been depleted of its riches? Are not the oil-fields and the mines now at their peak, ready to decline?"

But his answers indicate his conviction of the soundness of the American way and future, for he points out:

"Yet on the whole the argument would seem to work in the other direction. The wastage itself, though appalling, is indicative of a kind of greatness. Only a supremely prosperous people could afford to waste so much—to let land revert to unproductiveness, to be careless of erosion, not even to practice forestry. . . . No matter what the final judgment should be, a journey over U. S. 40 is at least highly instructive . . . you do not travel a parkway, and do not wander from national park to national park, seeking the spectacular in scenery. Instead, accepting the commonplace along with the spectacular, seeing the people and the country too, taking the good with the bad and the beautiful with the ugly, you gain some balanced impression of the United States of America."

Data on Self Loader

A truck self-loader is described in a folder from the Brisson Bros. Machinery Co., Norway, Mich. The Lodal, which has a 3,200-pound lifting capacity, is controlled by a single lever.

The booklet gives specifications of the unit and discusses its loading speed and mobility.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 774.

Whiteman Moves Plant

Whiteman Mfg. Co., Los Angeles, Calif., has grown 2250 per cent in the 11 years since Marvin E. Whiteman, President, developed a concrete finisher to replace the back-breaking hand method. Now, located in a new plant at 3249 Casitas Ave., Los Angeles, the company has added to its line a concrete-screeding machine and the Whiteman Power Buggy. The building houses a moving assembly line for the buggies, a large machine shop, tool and welding shops, testing department, sales and executive offices, and a research-design section.

A pint of blood means so much to them—so little to you. Phone your Blood Bank now.

CONTRACTORS AND ENGINEERS

P&H

MITI-MITE



ready for any job—anywhere!



GETS AROUND FAST TO LICK HIGH COSTS!

Wherever your jobs may be — 4 blocks or 40 miles away — MITI-MITE gets there in a hurry and does them in a way that means lower costs on every one. It makes new opportunities for you.

That's because MITI-MITE is engineered throughout for truck service exclusively. Every operating feature — every detail — down to the final simplicity of mounting on suitable truck — has been properly engineered for the purpose. It's simpler, more practical, more powerful; requires far less servicing.

And with all this, MITI-MITE has the extra stability that

lets you put more on the hook — apply more power at the tooth point. It means greater safety — greater speed — greater work capacity. It's fully convertible, of course. Ask your P&H dealer for complete details about MITI-MITE. Write for literature.

P&H TRUCK CRANE DIVISION
HARNISCHFEGER
CORPORATION

Milwaukee 46, Wisconsin



See your **P&H** Dealer!

Distributor Doings

Tractor Dealer Runs Own Proving Ground

"Practice what you preach."

Alvin Immel, International Harvester distributor in the heart of southern California's rich Imperial Valley at Holtville, has learned the wisdom of this old saying so well that he has helped his neighbors, his business, and himself. For years Immel has preached the importance of soil conservation, deep tillage, and large-scale agriculture with the use of big tractors. To show what he means, Immel now owns 1,800 acres which he uses to demonstrate his theories. Immel has been one of Imperial Valley's main leaders in big-scale soil conservation, land leveling, and deep tillage, and he has done as much as anyone to bring the big crawler tractor to the farm.

"Drawbar Horsepower"

Several years ago, for example, Immel bought a swampy 160 acres considered worthless by his neighbors. In a practical demonstration of the power of the TD-24 International crawler tractor, Immel then pulled a ditching machine all over the field by means of long cables, and laid a system of deep clay-pipe drains. That done, he used a companion TD-18 with its dozer blade to build a protective levee along the nearby irrigation canal. When the field was surface dry, he leveled it with a modern land-leveling rig. The TD-24 soon came in again to till the ground to a depth of 3 feet. Exactly two years after Immel purchased the worthless piece of boggy wasteland he cut 2 tons of alfalfa per acre from the field in April, May, and June, and got a total of 7 cuttings for that year. His neighbors then realized what Immel means when he preaches "drawbar horsepower" to modern farmers.

Hardpan Stifled Growth

All through Imperial Valley, repeated irrigation and cultivation has tended to build up a dense hardpan, only about 24 inches deep. This dense layer stifles root growth, prevents the penetration of irrigation water, and reduces income to the farmer concerned. Immel has shown with his TD-24 and TD-18 and Atlas deep plows how to sink sharp steel below this material to rip and loosen the soil structure to great depths . . . sometimes with special plows to a depth of 6 feet. Immel demonstrated on one 80-acre patch

of worthless alkali ground how to mix this surface salt with good sub-soil 36 inches deep. That job was done by the TD-24 and an Atlas plow. The first year Immel was so successful with his "proving ground" test that he gathered 1½ bales of cotton per acre off that plot.

Contractors Can Help

Immel is beginning to preach to contractors in his area, too, telling them that many types of large-scale tillage and land leveling are valuable side lines for them to consider along with their regular grading and road-building businesses. Farmers



This field was worthless until reclaimed with a TD-24 and an Atlas 36-inch tillage plow.

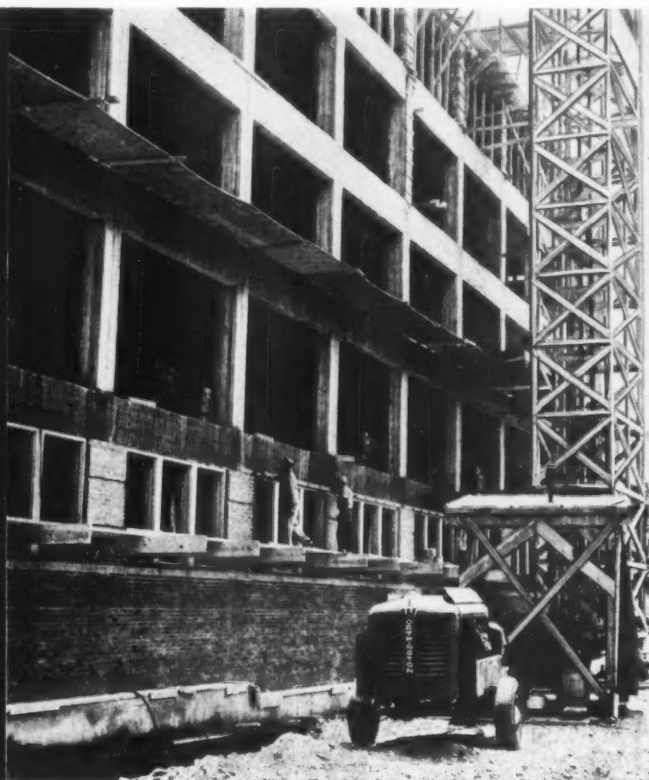
often need the drawbar power of the world's most powerful tractors, but their land holdings might possibly

not justify the purchase of rigs that big. Excavating contractors often

(Continued on next page)

"We can depend on our **BLUE BRUTES**..."

Writes J. E. Dunn, Jr., of the J. E. Dunn Construction Company, Kansas City, Mo., about Worthington construction equipment.



WORTHINGTON BLUE BRUTE 105-ft. compressor used by the J. E. Dunn Construction Company in construction of a new addition to the University of Kansas Hospital.

Mr. Dunn goes on to say: "We find that we can depend on our Worthington 105-foot and 60-foot compressors, which we have been using now for approximately 6 years. Maintenance costs of these units have been extremely low.

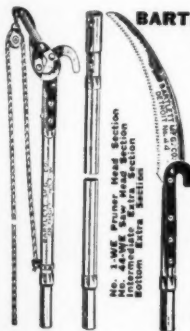
"We have used the Worthington Blue Brute to power hand-held air tools and kindred equipment on all types of construction jobs. Many of our jobs have been extremely tough, but our superintendents have learned to expect uninterrupted service from these machines and to date they have been getting just that. We believe in using the best machinery we can buy, because we know from our past experience that we get more for our money by buying the best."

Find out how Blue Brutes can step up efficiency on your construction jobs. Contact your nearest Worthington district office or distributor for more facts and bulletins. Or write to Worthington Corporation, Construction Equipment Division, Plainfield, N. J.

H.3.2



HARD-HITTING BLUE BRUTE breaker at work on the hospital job.



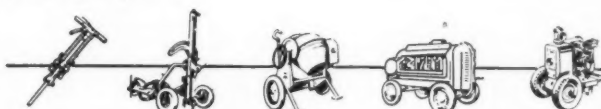
BARTLETT MFG. CO.
3035 E. Grand Blvd.
DETROIT 2, MICH.

Combination
Pruner & Saw
AVAILABLE
ON PRIORITIES

EASILY CARRIED IN
SMALL CAR OR MOTOR-
CYCLE

Length Weight
30 in. Pruner 23½ lbs.
30 in. Saw 15½ lbs.
72 in. Section 2 lbs.
72 in. Section 1½ lbs.
This combination can be
quickly and easily as-
sembled to make either
of these two tools:
1 Heavy Duty
Tree Trimmer
mer 14½" capacity
1 Fast-cutting
Pole Saw 14½ ft.
If other lengths are re-
quired, specify extra
sections 4 or 8 ft. long
to make the necessary
length.

WRITE FOR CATALOG 33.



If It's A Construction Job, It's A **BLUE BRUTE** Job



Distributor Doings

have just that type of equipment available and idle at the very late-winter season when it is needed, so Immel has urged repeatedly that small contractors who own such equipment give some consideration to the nearby agricultural need.

Immel also works closely with engineers of the Soil Conservation Service, wherever possible, to bring new leveling practices to the land. He was one of the very first tillage pioneers who demonstrated how to reclaim ruined fields by deep plowing.

Realizing that not too many farm setups are equipped for major service and repair work on tractors as large as the TD-18, the TD-24, or the D8 which is also quite numerous, Immel maintains a modern equipment-repair shop in his Holt-

ville Implement Co. establishment. Technicians with factory equipment can thus keep the machines in top-notch condition after they are sold. This is as important a part of Immel's reputation as his actual demonstration year after year, on his own place, of crawler-tractor equipment.

At the present time Immel is demonstrating his equipment and methods on 700 acres of alfalfa, 400 acres of cotton, and 640 acres in grains. The latter acreage is tied closely to still another activity: animal husbandry. Immel's herd of 500 Brahma cattle is one of the finest in the valley.

Albuquerque To Get Motor Clinic

Southwestern contractors and other engine owners can soon study sick engines in an unusually modern diagnostic clinic. By May 1, Harry Cornelius Co. expects to have the

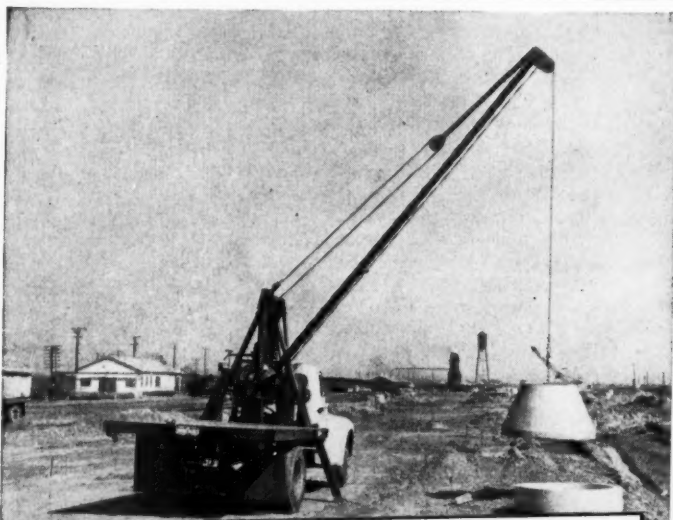
soundproof dynamometer-equipped engine study room completed and ready to serve customers in the area around Albuquerque, N. Mex. The new facilities will be installed at Cornelius' headquarters in Albuquerque.

According to W. H. Cornelius, Jr., President of the equipment-distribution firm which he is carrying on in the best traditions of his late father, the facilities will bring new efficiency to engine repairs. Contractors who are interested in checking on engine-repair jobs can study their rebuilt engines in the diagnostic clinic under conditions closely duplicating those in actual service. The 40 x 70-foot room will contain a soundproof study room, dynamometer, and run-in stands where engines up to 300 hp can be checked and studied. The run-in stands will allow contractors to place engines in service without a loss in

production because of a break-in period.

"Our dynamometer will let a customer see what an engine will do under continuous heavy loads, surge or shock loads, or practically any other operating condition", Cornelius explained. "Engines in construction service, on sawmills and pumps, or anything else, can be checked to see that repairs have been made to stand up under actual conditions. It takes the guesswork out of engine repair, and that's vital these days for two reasons: modern engines need careful treatment of this kind, and contractors have to make sure that their engines will last through many jobs."

Until recently occupied by the New Mexico State Highway Commission, the test building is being vacated this spring, and Cornelius will then move all necessary equipment in to set up shop. With the



NEW TOOL FOR THE CONSTRUCTION INDUSTRY

PITMAN HYDRA-LIFT

versatile inexpensive truck crane

The new Pitman Hydra-Lift comes ready to install on the frame of your truck. Hydraulic power swings boom 180 degrees, lifts boom 100 degrees. Boom telescopes from 12 to 22 feet. Lifting capacity is 6,400 pounds; requires only 40 inches behind the truck cab, leaving bed free for normal purposes. Write today for complete information on new Pitman Hydra-Lift!

PITMAN MANUFACTURING COMPANY

300 WEST 79TH TERRACE

KANSAS CITY, MISSOURI



with **NAYLOR PIPE**
YOU CAN PUT
Air where you need it



To bring in fresh air...to pull out fumes, gases and stale air... or to carry high-pressure air, there's nothing like Naylor lightweight pipe in underground construction.

Here's why. Naylor is built with an exclusive lockseam, spiralwelded structure which provides the extra strength, leak-tightness and safety that permit you to use this light-wall pipe in push-pull ventilating service and in high-pressure lines. Naylor pipe is easy to handle and install. When used with the Naylor Wedge-Lock Coupling, lines can be assembled quickly. Since the pipe can be coupled with only one side in the open, the line can hug the wall, thus saving valuable space.

For the full story, write for Bulletins No. 507 and No. 514.

NAYLOR PIPE

NAYLOR PIPE COMPANY

1270 East 92nd Street, Chicago 19, Illinois

New York Office: 350 Madison Avenue, New York 17, New York

CONTRACTORS AND ENGINEERS

exception of a very few such installations owned by other distributors for General Motors, the Cornelius clinic will be the only one of its kind in the southwest. It is expected to be the absolute answer to the dust problem, always a headache in Albuquerque where wind and flying grit are constant problems in an exposed shop.

The Cornelius firm has such accounts as Allis-Chalmers and its allied firms, General Motors, Schramm, Koehring, Pettibone-Muliken, Shield Bantam, and Gorman-Rupp. In addition, it specializes in bearings of all kinds and has one of the biggest stocks of brass fittings in the southwest. Contractors, oil men, lumber-mill owners, farmers, and many other equipment users in New Mexico take advantage of this specialized service.

The firm is especially known among southwestern contractors for its international flavor, and contractors delight in dealing with Lou Hubbard, an Englishman who is one of the top salesmen. Cornelius has a top-notch American salesman named Bill Sherritt, recently returned from the Korean Gypsy Guerilla Division; an Irishman from Texas, Pat Houlihan; one man from the deep south; Latin Americans, Navajo Indians, and so on.

This cosmopolitan outfit is doing a fine job in every way to give better service than ever to its customers.

Dept. Heads, Field Men Share Company Ownership

Ownership of the Marysville Tractor & Equipment Co., Marysville, Calif., has spread to include all the working heads of departments and field representatives, making a total of 18 full-time partners.

The company started on April 17, 1931, with two principals, D. W. Beatie and C. E. Stewart as equal owners. Mr. Beatie and Mr. Stewart have reduced their holdings throughout the years, and allowed their associates to acquire shares in the company.

Mr. Beatie and Mr. Stewart still have a substantial interest, with Dan W. and Ken D. Beatie as managing general partners. However, the majority of ownership is in the hands of qualified employees of the company. These include: Dick Adams, Arthur Bristow, Jesse Bristow, Walter Bristow, Aaron Burt, Neldon Cheney, Earle Hampton, Tobe Holcomb, Charles Lauppe, Tony Lucich, Roy Parker, Carl Phillips, Howard Spalding, Roy Stillwell, Jr., and Don Van Zandt.

Cruising Sales Meeting by Rish

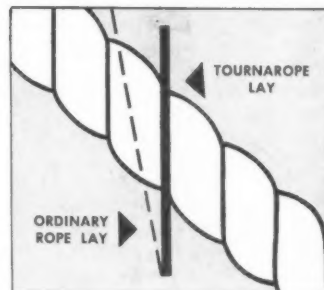
One Saturday recently "The Queen of Bermuda," bound for Hamilton and Nassau, headed out of New York harbor. On board were 105 officials, salesmen, and their wives, of the Rish Equipment Co., Bluefield, W. Va., which had planned

(Continued on next page)

"SAFETY FIRST" and Tournarope go together

Tournarope is a safer wire rope to use because it has 7% shorter lay and more steel per foot. As a result, pre-formed Tournarope offers these "Safety First" advantages:

1. **Stands up under severe flexing.** Built with a flatter twist, Tournarope has more "spring" action, absorbs "shock load" more easily.
2. **Resists crushing and kinking.** Shorter lay and flatter twist of pre-formed Tournarope gives a harder structure that better withstands crushing and kinking.
3. **Safer to handle.** Tournarope is pre-formed. Broken surface wires do not tend to snap outward to cut hands or tear clothing.
4. **Lasts longer.** The 7% shorter lay, more steel per foot, and harder structure add up to longer life service for Tournarope. That's safety first for your pocket book. Your annual rope costs will be lower.



Says a Tournarope user: "Twenty-one months ago I got a new tractor with new LeTourneau Power Control Unit and Scraper. I threaded it with Tournarope and to date am still using the same cable."

So play it safe with Tournarope. For price quotation, write your name, address, and rope specifications in the margin of this ad. Clip it out and send to . . .

Tournarope—Trademark Reg. U.S. Pat. Off. W-365-G-e



R. G. LeTOURNEAU, INC.

**Tournarope Division
PEORIA, ILLINOIS**

The Right Cutting Tools CAN CUT YOUR COSTS, TOO!



MODEL 200-A

NEW, POWERFUL, HAND OPERATED HYDRAULIC CUTTER

Cuts 1/2" reinforcing rod and other comparable materials with ease. Simple hand pump action develops 8500 p.s.i. exerting 10 tons cutting force. Blades easily removed for resharpening. Weight—15 lbs. Length—24".

MANCO

**SPECIALIZED
CUTTING TOOLS
FOR CONSTRUCTION
WORK...**

**Cut reinforcing
rod, chain, bolts,
wire rope**

NEW IN BOLT CUTTERS!



Reversible Jaws Give Double Blade Life

New, exclusive design gives you twice the cutting life from one set of jaws. Handles are guaranteed against breakage. Available in 30" size. Capacity, 1/2" bolts, 3/8" rod. Jaws alone available to fit standard 30" bolt cutters.

MODEL 2 MCC

PORTABLE HYDRAULIC GUILLOTINE

Heavy-duty hydraulic cutter provides 22 1/2 tons cutting force yet weighs only 40 lbs. Cuts 3/4" reinforcing rod, 1" log chain. Other similar models to cut wire rope. Easy hand pump action. Also available with a variety of power pump units for high speed production cutting.



MODEL 20-A

See Your Distributor or

Write MANCO MFG. CO., BRADLEY, ILLINOIS

APRIL, 1953



use the WILLARD "TASK FORCE"

YOU BATCH ON THE SPOT with a self-loading Willard Weigh-Batcher! There's no need to haul concrete from a distant batcher plant...no need to erect an expensive stationary batcher.

YOU SET UP with no effort beyond digging a shallow pit for the foot of the conveyor. The Willard mobile Weigh-Batcher is self-loading to a predetermined weight. And its capacity is ample to keep two or more truck mixers busy.

YOU SAVE, too, with a Willard Truck Mixer. There is no auxiliary engine. The drum is geared to the truck motor. This allows two feet shorter wheel base—for short turns and more round trips. The rear axle loading with 3 yards of concrete meets the laws of all states.

THE "WILLARD WAY" is the time-saving way! You get more done with fewer men and machines. Write for the "Willard Way" booklet.

Manufactured in Galion, Ohio, and Los Angeles

WILLARD CONCRETE MACHINERY SALES CO.
11700 WRIGHT ROAD, LYNWOOD (LOS ANGELES COUNTY), CALIF.



WILLARD
Weigh-Batch Loader



WILLARD
Mixer Loading Conveyor



WILLARD Truck Mixer

READY MIX "the Willard Way"

Invest In
U.S. DEFENSE BONDS
Now Even Better

Distributor Doings

this cruise as a novel way of holding its 1953 sales meeting.

The sail, including stops at Bermuda and the Bahamas, lasted 7 days, and counted as a week's vacation for each man. Two non-sunny days were chosen for the sales meetings.

WACO Convention

Miami, Fla., played host to the annual sales convention of Wilson-Albrecht Co., Inc., Minneapolis, Minn., in January, so WACO distributors took along their wives and had a sunny vacation as well as a business trip.

The convention was held at the Everglades Hotel where for three days distributors from all major cities in the United States, as well as parts of Canada and from over-

seas, attended demonstrations of new scaffolding products and techniques developed by WACO engineers. The WACO dealers saw films and slides and listened to talks by company management about business conditions affecting the construction industry. New sales and advertising programs for 1953 were also presented to the group.

Wilson-Albrecht manufactures steel scaffolding and related equipment.

Duval Co. Represents Stark

Duval Engine & Equipment Co., 1310 Brookpark Road, Cleveland 29, Ohio, is the new distributor in northern Ohio for Ralph Stark, Inc. The latter firm specializes in the rebuilding of diesel heads and blocks that have been cracked.

Duval handles all types of internal combustion engines, as well as pump and generator sets.

Koehring Dealers Appointed

Koehring Co., Milwaukee, Wis., manufacturer of heavy-duty construction equipment, has appointed three new distributors.

Kelbe Bros. Equipment Co., Milwaukee, Wis., is handling Koehring products in the state of Wisconsin. Its line includes products of Koehring's three subsidiary companies—Parsons Co., Newton, Iowa; C. S. Johnson Co., Champaign, Ill.; and Kwik-Mix Co., Port Washington, Wis. Kelbe Bros. succeeds Cunningham-Ortmayer as Koehring dealer in Wisconsin.

In Florida, Allied Equipment, Inc., Miami, is distributing Koehring equipment in the 13 southern counties of the state. The successor to Florida Equipment Co., it is also handling the Parsons Co. account.

The distribution of Koehring equipment, including Parsons products, in northern California is han-

dled by Standard Machinery Co., San Francisco, in succession to Koehring Co. West Coast Sales Division. Other authorized Koehring distributors in California are San Joaquin Tractor Co., Bakersfield, and Harron, Rickard & McCone Co., Los Angeles.

GM Dealers in New Jersey

Firms in New Jersey with construction and industrial equipment powered by General Motors Series 71 diesels will be interested in the appointment of two new dealers to handle complete sales, service, and parts facilities in the northern part of the state.

E. H. Kliebenstein Co., Ridgefield, N. J., has exclusive selling rights in Bergen, Passaic, and Hudson Counties. Diesel Engineering & Equipment Co., Fords, N. J., offers the same service in Monmouth and Middlesex Counties.

Both organizations offer General Motors diesel engines (30 to 845-hp); generator sets (15 to 200-kw); and the Hallett diesel line in the low-horsepower range—diesel engines 5 to 18-hp and generator sets 2½ to 10-kw.

The main office of General Motors is in Detroit, Mich.

Buck Equipment Names Dealers

The following new dealers have been appointed by Buck Equipment Corp., Cincinnati, Ohio, manufacturer of construction equipment: in California, Gridley Equipment Co., Los Angeles 21, and Waco May, Los Angeles 27; in Oregon, Contractors Equipment Corp., Portland 14, and Cal-Ore Machinery Co., Inc., Medford; and in Idaho, Engineering Sales Service, Inc., Boise, and Flaherty Equipment Co., Pocatello. Also named are Dale & Rankin, Inc., Newark 4, N. J.; Construction Machinery Corp., Shreveport, La.; Central Supply & Equipment Co., Inc., Danville, Ky.; Caird Engineering Works, Helena, Mont.; and Southern Machinery & Supply Co., Roanoke, Va. Buck Equipment's new distributors in Canada are: Inter-



Figuratively speaking, two heavy-duty LIMA cranes have been "pulling themselves up by their bootstraps" on the Tilaiya Dam in India. Equipped with 2-yard, bottom-dump concrete buckets, they work across the dam placing concrete in 4-ft. high layers. At the end of each cycle they move up to the top of the layer just poured . . . then start pouring the next layer.

No matter where the job or what it is, you'll find you can do it better with a versatile LIMA. Their greater, better-balanced weight assures the stability needed to use long booms at low angles . . . their ease of control insures easy, fast positioning of buckets or hooks . . . their maneuverability makes it easy to climb steep inclines or inch to the edge of long drops. What's more, the sturdy unit construction, simple rugged design, anti-friction bearings, and many other features give plenty of stamina for the toughest jobs . . . long life and absolute minimum maintenance.

See your LIMA distributor. He'll be glad to explain how a LIMA machine can do a better job. The LIMA line includes shovels ¾ to 6 yards, cranes up to 110 tons, and draglines variable.

LIMA
SHOVELS • CRANES
DRAGLINES • PULLSHOVELS



BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

Construction Equipment Division

WET JOBS

Whether it's

HEAVY CONSTRUCTION

BUILDINGS

SEWERAGE

or any other type of wet work

For "quick-dry" . . . specify . . .

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

CONTRACTORS AND ENGINEERS

national Agencies & Machinery Co., Ltd., Vancouver, B. C.; Laurentide Equipment Co., Ltd., Montreal 15, Quebec; and Wilkinson & McClean, Ltd., Edmonton, Alberta.

Gradall Service Clinic

A service clinic was organized recently by The Warner & Swasey Co., Cleveland, Ohio, manufacturer of the multi-purpose Gradall earth-mover, in conjunction with Service Supply Corp., Philadelphia, Pa., Gradall distributor.

The class was conducted in Service Supply's shop by Ray Clever, Service Manager of Warner & Swasey, assisted by Bill Burton, local service representative. Intended for Gradall owners, operators, and mechanics, it included an orientation, slides, and a discussion of the care and maintenance of equipment, based on methods tried and established by Warner & Swasey. So great was the interest shown that the class, originally planned for a morning only, lasted until 3 o'clock in the afternoon.

Heiliner Distributors' Open House

Open House for Heiliner distributors was held at The Heil Co., Milwaukee, Wis., to wind up the annual AED Convention in February. Heavy-construction dealers from all parts of this country and Canada toured the Heil factory, were shown a new color-sound Heiliner movie, and saw displayed the 2C800 Heiliner scraper with bottom end-dump wagon (20 cubic yards heaped capacity) and the 2C500 (13 cubic yards heaped capacity).

The Heil Co., which celebrates its 52nd anniversary this year, manufactures bodies and hoists, automatic heating units, and a complete line of road machinery.

Midwestern Equipment Moves House

Less than 7 years after organizing the Midwestern Engine & Equipment Co., Tulsa, Okla., distributor for Continental engines, O. E. Murrey and Armon Bost are moving it into a newly built structure that is ultra-modern in design and detail.

The building has 12,000 square feet of space, a third of it given up to offices and the rest to display, storage, and other uses. Other details include up-to-date repair facilities, a hydraulic lift for loading and unloading heavy equipment and supplies, separate service entrances, and a railway spur that is being constructed to the site.

Georgia Distributor for Huber

A recently organized distributor is handling the products of Huber Mfg. Co., Marion, Ohio, in the state of Georgia. Contractors Equipment Co., Inc., 916 DeKalb Ave., N. E., Atlanta, Ga., will carry Huber's complete line of road maintenance units—maintainers, graders, 3 to 14-ton tandem rollers, and 5 to 14-ton 3-wheel rollers.

W. W. Burch is President of the company; B. L. DeLoach is Vice President; and T. B. Lowe is Secretary-Treasurer.

Meacham for Sargent Engineering

J. W. Meacham of Stafford Springs, Conn., has been appointed Connecticut distributor for Sargent Engineering Inc., Fort Dodge, Iowa, maker of power shovels and cranes.

Midwest Distributors for Wood

Three middle-west distributors will handle mix-in-place road-building equipment for Wood Mfg. Co., North Hollywood, Calif. These include: Illinois Contractors Machinery, Inc., Melrose Park and Peoria, Ill., which will distribute Wood products in northern Illinois and Lake and Porter Counties in Indiana; Stockberger Machinery Co., Fort Wayne and Indianapolis, Ind., whose territory covers the state of Indiana, excluding Lake, Porter, Harrison, Floyd, and Clark Counties; and Machinery, Inc., St. Louis, Mo., which will serve customers in southern Illinois and the eastern part of Missouri.

Automatic Devices in South

Tri-State Equipment Co., Inc., 520 Mulberry, Memphis 2, Tenn., has been appointed distributor for Automatic Devices, Inc., in the Memphis area. This includes eastern Arkansas, western Tennessee, and northern Mississippi.

W. G. Clark is Director of Tri-State.

Drayton for U. S. Expansion Bolt

Charles O. Drayton, Jr., owner of Drayton Associates, West Warwick, R. I., is the recently appointed New England representative of U. S. Expansion Bolt Co., York, Pa., manufacturer of anchors, expansion bolts, and masonry drills. Mr. Drayton's

territory will include the states of Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, and Connecticut.

Drayton Associates represents various other manufacturers of threaded fasteners, machine tools, and anchoring devices.

Frantz Tractor's Milton Branch

A new branch of Frantz Tractor Co., N. Y., opened in Milton, N. Y., on March 14. It offers complete service, sales and parts facilities for a number of companies, including Allis-Chalmers Mfg. Co.; Gar Wood Industries, Inc.; Baker Mfg. Co.; Joy Mfg. Co.; Wayne Crane Division

(Concluded on next page, col. 3)

5 WAYS THE

The 5 features below will be found only in the Lorain-50 "Series". They are important features because each one can add profit-dollars to your jobs. Whether your job calls for crawler or rubber-tires, you can fit the Lorain-50 to your needs... and be sure of getting the most value for your money. Let your nearby Thew-Lorain Distributor tell you why you get...

MORE FOR YOUR MONEY IN THE 1 Yd. CLASS!

- 1-YARD SHOVEL — 30-TON CRANE (on rubber)**
There's more selection in the Lorain-50 "Series" of shovels-cranes. 7 different sizes and types of mountings to choose from... 5 front ends available. All models embody exclusive Lorain-50 design and quality features for profitable performance and long life.
- HYDRAULIC (fluid drive) COUPLING**
The only 1-yard class machine with Hydraulic Coupling as standard equipment. No shocks, no engine stall. Reduced wear and tear even on rock work... smoother, more accurate crane control.
- AIR CONTROLS—EASIER OPERATION**
Air does the work on the "50" crawler machine. Full air control of crawler steering and tread lock — air assist available for hoist, crowd and retract operations. Air steering standard on all rubber-tire models.
- CHOICE OF 4 CRAWLERS**
The right crawler can improve performance. You can fit the "50" with a crawler to match exactly any ground or working condition. Select from standard, all-purpose, extra-long, and extra-wide crawlers.
- 2 TYPES ON RUBBER**
A big 30-ton, 30 m.p.h. Moto-Crane for big lifts and high-speed mobility. Also, available as a 30-ton, single-engine Self-Propelled crane on rubber. 4 travel speeds up to 7-1/2 m.p.h. in both directions.

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN

LORAIN 50 SERIES

5 WAYS THE 50 PAYS PROFITS!

ON CRAWLER

(Above) A 1-yard Lorain 50-I shovel maintains a steady production pace, loading out tough quarry rock for Foster, Alder and Wright of Fayetteville, Tenn. In rock work like this, the Lorain Hydraulic Coupling puts full engine power to work. Shocks and impacts can't be transferred into mechanism or cables.

(Below) The fast stepping, 30-ton Lorain Moto-Crane, Model MC-524, is helping to build 24 piers and 4 abutments for twin bridges for the Ohio Turnpike between Peninsula and Boston, Ohio. The Horvitz Co. of Cleveland find the 30 m.p.h. mobility a money-making asset in moving to many job locations on this big road job.

ON RUBBER TIRES

PRESS-UR-METER

FOR TESTING AIR ENTRAINED CONCRETE

COMPACT . FAST . CONVENIENT
GUARANTEED ACCURACY

SAMPLE REMAINS INTACT: Small amount of water used in test permits using same sample for slump and compression tests.

Now in World-Wide Use!

Universal acceptance: U.S. Bur. of Recl., Army, Navy, Public Roads; many St. Highway Depts., Commercial Laboratories, Ready Mix Plants; Major Projects in N. & S. America, Europe and Asia. SPECIFIC GRAVITY and MOISTURE DETERMINATIONS of aggregates quickly made using the NEW CHART now furnished with the PRESS-UR-METER. LET US TELL YOU about this important extra value of the PRESS-UR-METER for testing and designing concrete mixes.

For complete information, write to
CHARLES R. WATTS & CO.
4121 - 6th Ave. N. W. Seattle 7, Wash.

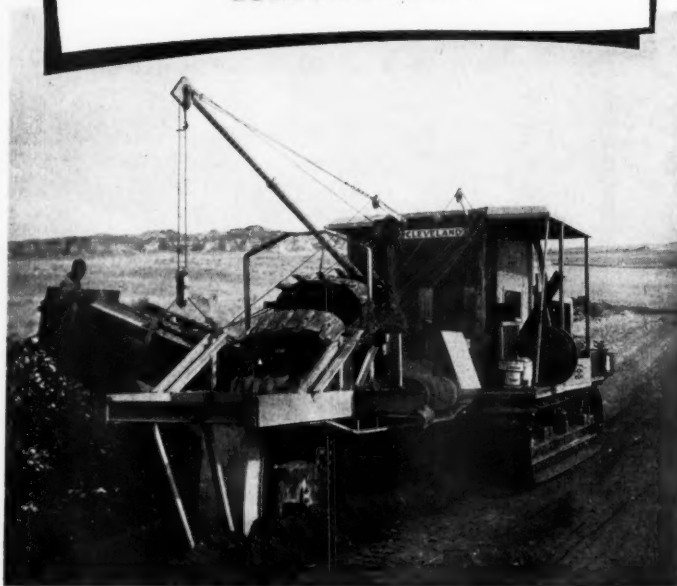


Exclusive sales agents

"We use CLEVELANDS almost exclusively for the simple reason that they are the most economical trenchers we have ever used."

R. H. Fulton & Company

LUBBOCK, TEXAS



The constant flow of repeat orders for CLEVELAND trenchers—for all types of trenching work—is first hand evidence that thousands of users throughout the world are in wholehearted agreement with R. H. Fulton & Company's tribute to CLEVELANDS.

Get the full story on CLEVELANDS
from your local distributor



THE CLEVELAND TRENCHER CO.

Pioneer of the Modern Trencher

20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

Distributor Doings

(Continued from preceding page)

of American Steel Dredge Co., Inc.; Pitman Mfg. Co.; Challenge Mfr. Co., and Tractomotive Corp.

Marshall L. Noel is President and John T. Seltzer is Vice President and Sales Manager. The main office is at 2740 Ewen St. (Bronx), New York 63, New York.

Cleco Appoints 4 Distributors

Cleco Division of Reed Roller Bit Co., Houston, Texas, has announced the appointment of the following distributors for Cleco products in their respective areas: General Equipment & Machine Co., South Bend 17, Ind.; A & I Supply Co., Charleston, W. Va.; Lyons Machinery Co., Little Rock, Ark.; and Equitable Equipment Co., Inc., New Orleans 12, La.

Cleco manufactures the Cleco and Dallett lines of air tools for construction, metal fabrication, industrial maintenance, etc.

Deephouse Is Named

Deephouse Equipment Co., Berlin, Conn., has recently taken over two new accounts. These are Link-Belt Speeder Corp., Cedar Rapids, Iowa, manufacturer of shovel cranes, and T. L. Smith Co., Milwaukee, Wis., producer of truck mixers.

Deephouse Co. is located at 160-170 Farmington Ave., Berlin, Conn.

Redman for Viber in Arizona

Lee Redman Equipment Co., Phoenix, Ariz., is the distributor for Viber Co. in the state of Arizona. It will handle all types of vibrating equipment, and a complete line of new Viber units and replacement parts.

Houston Handles Lima in S. Dak.

Sales and service for Lima shovels, cranes, and draglines in the state of South Dakota is now being handled by Stan Houston Equipment Co., Inc., Sioux Falls, S. Dak.

The Lima line is produced by Baldwin - Lima - Hamilton Corp., Lima, Ohio.

Metropolitan Equipment Manager Richard D. Kellegrew recently became General Manager of Metropolitan Equipment & Service Co., Lexington, Mass., a distributor for Chicago Pneumatic Tool Co., Chicago, Ill.

Equipment Dealers—this is your department, so send your news—all about your new plants, new lines handled by your company, and new staff appointments.

Scraper for Small Rubber-Tired Tractors

A small scraper for Ferguson and Ford tractors is announced by Earth Equipment Corp., 2036 Sacramento St., Los Angeles 21, Calif., distributor for the Leland T. McGee Mfg. Co. Features of the Model 5021 include an improved hydraulic upper link. The top hookup has been raised to give longer life to scraper, upper link, and tractor. With the hydraulic upper link the operator can adjust the tilt of the scraper for scraping, backfilling, scarifying, or scarifying and scraping, without getting off the tractor.

The new model comes with either six or nine scarifying teeth. Bucket capacity is approximately $\frac{3}{4}$ yard. Both cutting and backfilling blades are 5 feet 6 inches wide. The rear blade is adjustable.

For further information write to the company, or use the Request Card at page 18. Circle No. 705.

Data on Centrifugal Pumps

Literature on self-priming centrifugal pumps is available from the Ralph B. Carter Co., Hackensack, N. J. The twin-coaxial volute featured in Humdinger pumps is described and shown in a cutaway drawing. The booklet tells how the pump primes with just enough water to cover the eye of the impeller. Four-step adjustment of the impeller is shown in photographs.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 745.

Eliminate 70% to 90% of Conveyor Downtime



Cedarapids

Built by IOWA

MOTORIZED HEAD PULLEYS

eliminate maintenance on chains, belts, sprockets, Universal drives, countershafts, etc.

EVERYTHING is contained INSIDE the pulley shell!

HERE'S a money-saving departure from conventional conveyor drives. A Cedarapids-Schrock Motorized Head Pulley is simply a new application of the long-proven gear reduction drive, with everything... electric motor, reduction gears and all moving parts... contained inside the drum, completely protected from grit, dirt and weather and with no outside parts or motors to service. 70% to 90% of conveyor trouble and downtime is saved by eliminating the exposed parts necessary with conventional pulley drives. In operation, the pulley shell rotates about

the electric motor which is held stationary by a torque arm attached to the conveyor frame. The speed of the shell depends on the combined reduction ratio of the pinions and gears inside the shell. Compact, easy-to-install, job-proved Motorized Head Pulleys are available in sizes from 5 to 30 HP and in various widths.

Find out all the advantages of converting your belt conveyor or belt-bucket elevator installations to motorized efficiency before you need head pulley replacements. See your distributor today, or write for Bulletin MP-1.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

Built for sale in Arizona, California, Nevada, New Mexico, Southern Oregon, Southwestern Utah and Texas by
YUBA MANUFACTURING CO.
(Pulley and Sprocket Department)
Benita, Calif.

CONTRACTORS AND ENGINEERS

Turner Turnpike's Base Course

Manager of Oklahoma Turnpike Authority Addresses ARBA on Placement of Aggregates

• AT the 1953 Annual Meeting of the American Road Builders' Association in Boston, Mass., H. E. Bailey, General Manager of the Oklahoma Turnpike Authority, spoke on the control and placement of the graded-aggregate base course on the Turner Turnpike. The Turnpike is scheduled to be opened to the public on April 17.

Blended Aggregates

The base course used in construction of the Turnpike, said Mr. Bailey, is 7 inches in thickness; it is composed of coarse crushed aggregate (maximum size 2 inches), blended with finer materials and soil binder, and compacted to 95 per cent standard Proctor density. It functions as a part of the pavement foundation, distributing the vehicle loads from the pavement surface to the underlying soils.

The entire Turnpike paving consists of 12 inches of selected subgrade material, the top 6 inches having a 2-inch maximum size, a minimum CBR of 10 and a maximum PI of 9, and the lower 6 inches having a minimum CBR of 8 and a maximum PI of 10; 7 inches of crushed graded-aggregate base; 3 inches of coarse asphaltic concrete, sometimes called a leveling course; and 2 inches of fine asphaltic concrete, the wearing course. The total thickness is therefore 24 inches.

As required by the Oklahoma Turnpike Act, the paving contracts were let separately from the grading contracts. As a part of the grading contract, the grading contractor placed 16½ inches of selected subgrade material uniformly over the roadway surface. When the paving contractor moved in, his first operation was to remove the 4½ inches of special subgrade material directly under the paving area, placing the material removed in the median and shoulders.

Upon removal of this material, the control and placement of the base course itself started. The quality of any pavement depends to a large extent on the attention paid to preparing the subgrade.

Control

In order to control the line, grade, and typical cross section, two lines of paving hubs or stakes were set at 50-foot intervals, one on each side of the traffic lane being paved, and offset from the edge of the paving a sufficient distance to prevent being disturbed by the work. One line of the hubs had points for line as well as grade. All operations, the shaping of subgrade, the laying of the base course, and the placing of the asphaltic-concrete paving, were done from these hubs. A tolerance of ½ inch was permitted provided the difference in variation from grade and cross section of any two adjacent readings taken at 10-foot intervals was not more than ¼ inch.

The subgrade was then shaped to these requirements, and compacted

to 95 per cent standard Proctor density. Any soft or unsuitable materials encountered in the subgrade during this operation were removed and replaced with satisfactory material. Trucks hauling material were directed to drive over the subgrade in order to expose any weak spots in it. At several locations, underlying the selected material, a soft clay was found, which had not been exposed by grading operations and which required the excavation of one area some ¼ mile in length and in some places as much as 8 feet in depth, comprising a total of 20,000 cubic yards. However, large or small, all subgrade weaknesses found were promptly corrected, so that the finished subgrade of the Turnpike was itself capable of supporting a loaded dump truck, hauling approximately 20,000 pounds of crushed rock.

The coarse aggregate used in lay-

ing the base course was obtained partly from commercial plants, but mostly from roadside production by portable crushers. The combined and thoroughly mixed materials for the stabilized aggregate base course had to pass a sieve test, with a cer-

tain percentage passing through sieves of nine different sizes varying from 2 inches to No. 200. The material had to have a plasticity index of less than 8 and a liquid limit of less than 28, in addition to having a

(Concluded on next page)

Aeroll

JUMBO SIZE "HEET-MASTERS"

NEW MODELS — 375- and 500-GALLON CAPACITY



Combining all the features of the famous "Heet-Master" internal tube heated kettles, the "Jumbo" is built for fast, hard trailing — anywhere you can drive a truck.

A double tube system (patented) insures "hot stuff" a few moments after the burner is started in quantities ample for those big jobs. Also can be equipped with power, or hand spray as an integral part of the unit. Write for literature.

AEROIL PRODUCTS COMPANY, INC.

75 WESLEY ST., SOUTH HACKENSACK, N. J.
CHICAGO • DALLAS • SAN FRANCISCO • LOS ANGELES • SEATTLE
PITTSBURGH • DEDHAM (MASS.)

Cutting fleet costs on OPERATION:

START-STOP!



• Buri's Sunlit Bakery, Eau Claire, Wisconsin, kept its fleet of trucks hustling to deliver fresh bakery goods on schedule over ever busier routes. More continuous operation and tougher start-stop conditions caused maintenance troubles. Individual units averaged only 40,000 miles between overhauls.

Upon the advice of a Standard Oil automotive lubrication specialist, the fleet was switched to STANOLUBE HD, Standard's original heavy-duty motor oil. Deposit troubles previously experienced with a conventional lubricant were eliminated. Mileage between overhauls for individual units approached 90,000.

Recently, the officials of Buri's Sunlit Bakery adopted Standard's new and better STANOLUBE HD-M Motor Oil for use in their fleet engines. When one of the units was overhauled after 97,000 miles operation on STANOLUBE HD-M, engine internal parts were found to be clean as new. Officials report that through use of Standard's products and service they have reduced maintenance costs 30%.

Make the experience of this fleet your basis for investigating the benefits offered by STANOLUBE HD-M Motor Oil. You can obtain the services of a Standard Oil Automotive Engineer by phoning your local Standard (Indiana) office. Or, write: Standard Oil Co., 910 S. Michigan Ave., Chicago 80, Ill.

Now, over 90,000 miles
between overhauls with . . .

STANOLUBE HD-M
REG. U. S. PAT. OFF.
Motor Oil

STANDARD OIL COMPANY (Indiana)



Turner Turnpike's Base Course

(Continued from preceding page)

percentage of wear of not more than 50, as determined by the Los Angeles abrasion test on the material retained on the $\frac{3}{8}$ -inch sieve.

Although the specifications allowed a minimum of 40 per cent crushed aggregate, the general average ran from 47 to 70 per cent, with the exception of one contract which ran just over the 40 per cent minimum. On this contract, a commercial crushed limestone was used and blended with local uncrushed materials obtained near the site. The contractor found that he had to figure something over 40 per cent on his crushed limestone in order to wind up with the required 40

per cent in his completed base. On materials obtained from local pit productions, there was generally enough limestone dust and fine particles to make the required gradation with the addition of only a small quantity of other fine materials. All sources of coarse aggregate were tested for hardness and abrasion before they were authorized for use. The entire mix proposed by the contractor was also checked by the laboratory to see that it had the specified gradations and texture.

Placement

In nearly all cases, the base course was placed in two lifts. One contractor tried putting the base course down in one lift but did not have much success with it as he had difficulty getting the required com-

paction near the bottom of the lift.

The base-course material was transported from the crusher to the work site in dump trucks, each load being weighed. The number of truck loads of each type of material for the section under construction was determined and the loads were dumped at regular intervals based on these calculations. All material was paid for by the ton in place. Generally the base was laid in sections about $\frac{1}{2}$ mile in length.

When all the materials were placed in the section being worked, blending was started. Blades would move the windrow of materials back and forth across the roadway until all materials were thoroughly blended. During this operation water trucks with a spraybar would keep the materials sufficiently moist for

workability and to keep from losing the fines. Care was also exercised to see that too much water was not used in order not to soften the subgrade.

After the materials were thoroughly blended, they were spread to the desired width and depth and compacted with sheepfoot and pneumatic rollers to 95 per cent standard Proctor density. Upon completion of the top lift, a final "slush rolling" was made. This rolling was preceded by an extra shot of water to bring some of the fines to the surface, thus giving a smoother and tighter finish course.

Before the laying and compaction of a section of base, samples were taken at regular intervals for the entire length of the section and each sample tested for the required gradation. If any of the samples did not meet the tests, the entire section being processed was reworked with the necessary corrections to bring it up to standard. Density tests were made at regular intervals after compaction to insure that the base met the specification requirements.

After a section had met all tests, it was checked for line and grade from the paving hubs. This is very important, as the machines which lay the first course of asphaltic concrete are designed to lay a uniform thickness and any irregularities in the base course will be reflected in the finished pavement surface. Tolerances of $\frac{1}{2}$ inch in thickness were permitted, provided the difference in variation from grade and cross section of any two adjacent readings taken at intervals of 10 feet did not exceed $\frac{1}{4}$ inch. Care was also taken that no low spots were left, and that the base course drained from median to the shoulder. Any irregularities beyond these tolerances were torn up and corrected before the base course was considered complete.

Upon completion of the base course to the required specifications line, and grade, it was promptly given a prime coat of MCI or MCI special asphalt at a minimum rate of 0.35 gallons per square yard in order to seal the surface, keep water out of it, and prevent raveling under construction traffic. The first contractor was then ready for his next operation; the placing of the first 3-inch course of asphaltic concrete.

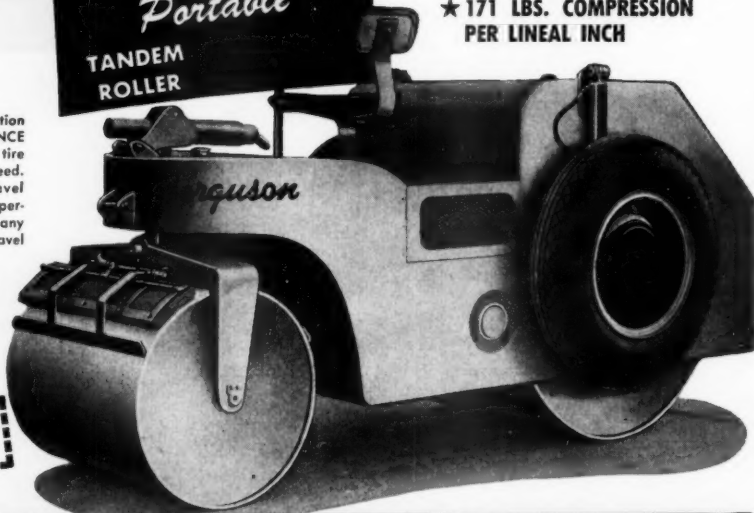
In constructing the Turnpike base course, Mr. Bailey explained, it was necessary to have close cooperation from all engineers, technicians and contractors involved. He took the opportunity to say that any variations or let up in procedure described above were few and far between. The graded aggregate base was economical to construct as it was composed almost entirely of local materials involving a minimum of transportation costs. It is expected to bear its part of the 28,800-pound axle load for which the Turnpike paving is designed.

COMBINATION CONSTRUCTION AND MAINTENANCE ROLLER

This rugged, easy-to-operate combination CONSTRUCTION and MAINTENANCE ROLLER trails to your job on rubber tire travel wheels, at normal truck speed. Instantly ready for work, as travel wheels retract hydraulically. Roller operates forward or backward alongside any standard curb without removing travel wheels. Or with wheels removed (in 2 minutes) roller will operate within 4 inches of fence or wall. Rear compression roller 48" in diameter, 42" wide. Front steering roller 30" diameter, 40" wide. Detailed specifications gladly sent on request.

WRITE FOR DESCRIPTIVE FOLDER and PRICES

THE **Ferguson**
3 to 5 TON
Portable
TANDEM
ROLLER



- ★ INSTANTLY PORTABLE
- ★ EASY TO OPERATE
- ★ STREAMLINED FOR STRENGTH AND APPEARANCE
- ★ BUILT FOR YEARS OF SERVICE
- ★ 171 LBS. COMPRESSION PER LINEAL INCH

SHOVEL SUPPLY COMPANY, Mfrs.

Office & Plant
4900 MINES BLVD.

Dallas, Texas

Mail Addr. P.O. BOX 1369
Cable Addr. SHOCO, DALLAS



BIN BATCHER-MIXERS

An Unbeatable Combination

Whether used for charging an individual 115 or 165 Mixer, or a pair as shown, a Bin-Batcher is the short cut to profit. Enables you to take the advantages of a central plant right onto any job. Several models. Ask for details.

• PORTABLE
• SAVES LABOR
• CUTS COSTS

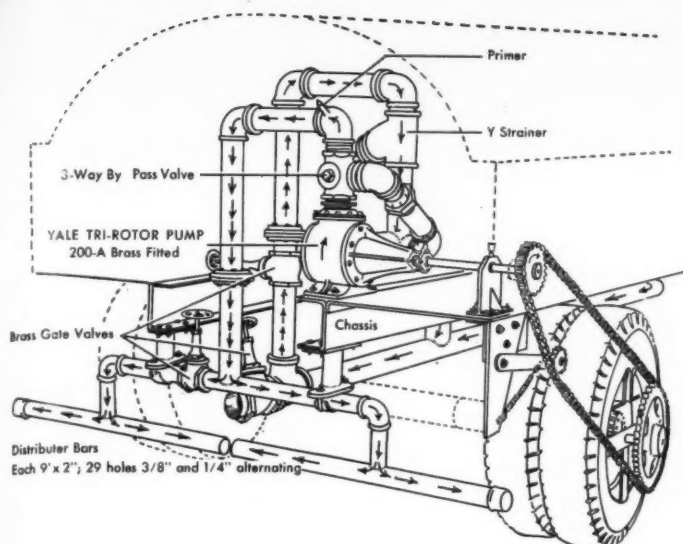


CONSTRUCTION MACHINERY COMPANIES Waterloo, Ia.

Strike Back!

GIVE

TO CONQUER CANCER



A sprocket attachment connecting a wheel of a tank with the shaft of a Yale Tri-Rotor pump meters calcium chloride spray solution and adjusts its flow to the truck speed.

Road Spray Constant As Truck Speed Varies

A metering system which delivers a constant amount of road spray per unit of surface regardless of variations in the speeds of the tank trailer has been developed by the Dow Chemical Co., Midland, Mich. The heart of the control system is a pump, chain-driven by one of the rear wheels of the trailer. Until recently, a worker had to be stationed at the rear of the tank to judge the flow by eye and control it by hand.

Typical of automatic flow control is one calcium-chloride spray installation that uses a bronze-fitted, standard-head, clockwise rotation Yale Tri-Rotor pump mounted on the back of a 2,000-gallon tank trailer. The only modification to this pump is in the shaft, which has 25 inches extra length, and is supported at the sprocket end by a pillow block bearing. It is connected to the righthand trailer wheel by a chain-and-sprocket drive.

The sprocket ratio is determined by dividing the number of gallons

sprayed per mile by the number of gallons delivered per pump revolution to get the number of pump revolutions per mile. The tire size gives the number of wheel revolutions per mile from which a suitable sprocket arrangement can be made to transmit to the pump the required revolutions per mile.

J. N. Fauver Co., Detroit distributor, points out that the final success of the installation, that is, spreading the calcium-chloride solution evenly without excessive spray or high back pressure, depends on having the proper number, size, and spacing of holes in the distributor pipe.

Some variants of the basic installation have proved successful. Where several road boards or commissions must use the same tank, a variable displacement head meets the different needs on amount of solution, or varying strengths of solution which will be encountered. The by-pass head will eliminate the need for an external by-pass, and provide an extra margin of safety for the pump. In a Genesee County, Mich., in-

stallation, the by-pass valve is opened and closed by hand, and the sprocket chain adjusted and removed by the truck driver at the start and end of each run. Both operations can be handled from the truck cab by using a solenoid to operate the by-pass valve and installing a clutch between the wheel and the wheel sprocket.

The pump drive should always be disconnected and the solution bypassed when the trailer is being moved to and from the road to be sprayed. The inside of the pump should be spread with a protective coating such as crude oil before handling calcium chloride, and it should be flushed out with clean water after every day in use. With proper protection, the installation will last for at least 2 years of heavy use.

For further information write to the Pump Sales Dept., Yale Lock & Hardware Division, 200 Henry St.,

Stamford, Conn., or use the Request Card at page 18. Circle No. 830.

Wire-Rope-Sling Handbook

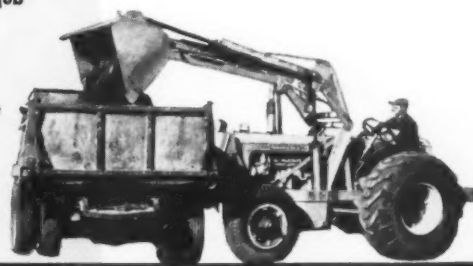
A new handbook on slings and fittings is now available from the A. Leschen & Sons Rope Co., 5909 Kennerly Ave., St. Louis 12, Mo. It contains more than 100 illustrations showing standard wire-rope slings, grommet slings, and multiple-part slings, the latter including flat-laced hand-braided slings.

Charts show correct calculations for determining the size of the slings required, and correct sling angles in relation to loads. The new line of Red-Strand 8-part braided slings is featured in the handbook, along with the Pin-Lock Thimbles.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 787.

MM WHEELERS

- Equipped for your job
- easy to handle
- high speed
- large capacity
- high engine torque at low rpm
- durable single unit construction
- low in cost
- nearby parts and service



Up and out, with power to spare! Heavy-duty MM Wheelers offer the important advantages of proved conventional design.

Rugged  **WHEELERS**

Built and equipped for your heavy jobs!

CONVENTIONAL DESIGN FOR FRONT OR REAR END ATTACHMENTS

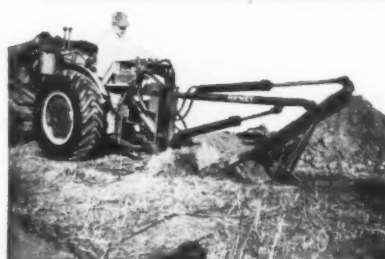
You get more work out of MM Wheelers with this conventional design that handles a bigger variety of attaching equipment. Front and rear mounted equipment makes both ends of your Wheeler pay. Practical drawbar applications further reduce machinery investments. MM design combines economy of first cost; fast, easy operation; ability to handle more tool types, and real operating safety.

Let your MM distributor demonstrate. See for yourself why MM owners call their Wheeler and equipment combination the "one man contractors."



MORE WORK from more equipment! MM Wheeler owners get all the advantages of design that make both ends pay — like this 3 yd. scraper.

Provisions for rear mounting give you real back-hoe performance. Again, Wheeler design pays off with more work from standard design.



TRIPLEX BACKFILL TAMPERS

Save 30% in Tool Investment

Reduce Compressed Air Consumption 50%

Release **FOUR MEN** for Productive Work on Your Job

SAVE 75% ON YOUR BACKFILLING COSTS

Write for Information



**GUNDERSON-TAYLOR
MACHINERY COMPANY**

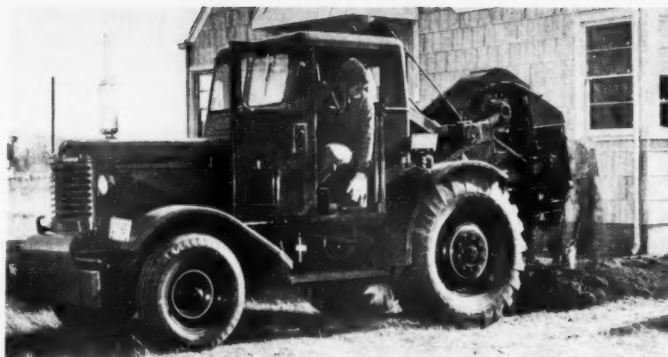
988 Cherokee Street • Denver 4, Colorado

MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA

Ditcher Transmission Gets Fluid Coupling

A new ditcher on pneumatic-tired mounting is announced by the Barber-Greene Co., Aurora, Ill. The Runabout, Model 705-B, adds a complete fluid coupling to the Hydra-crowd hydraulic transmission of the predecessor Model 705-A. With the fluid coupling, the manufacturer points out, underground obstructions, hidden pipes, boulders, and roots pose less of a problem. Too much resistance causes the coupling to slip and the bucket line stops. The unit is powered by a Chrysler engine.

The transmission provides the machine with a range of forward speeds up to 16 fpm. It is controlled by a faucet-like valve and the crowding speed of the machine is accelerated or retarded according to the hydraulic flow. A second



The Runabout ditcher has fluid coupling and a bucket with new curved teeth.

innovation is the design of the digging buckets' curved teeth, which have the same longitudinal cross section from tip to shoulder and are said to remain sharp until worn down to the point of discard. Both ends of the tooth are identical in shape, so

that worn teeth may be reversed.

The digging width of the ditcher ranges from 5½ to 10½ inches. Maximum depth is 4 feet.

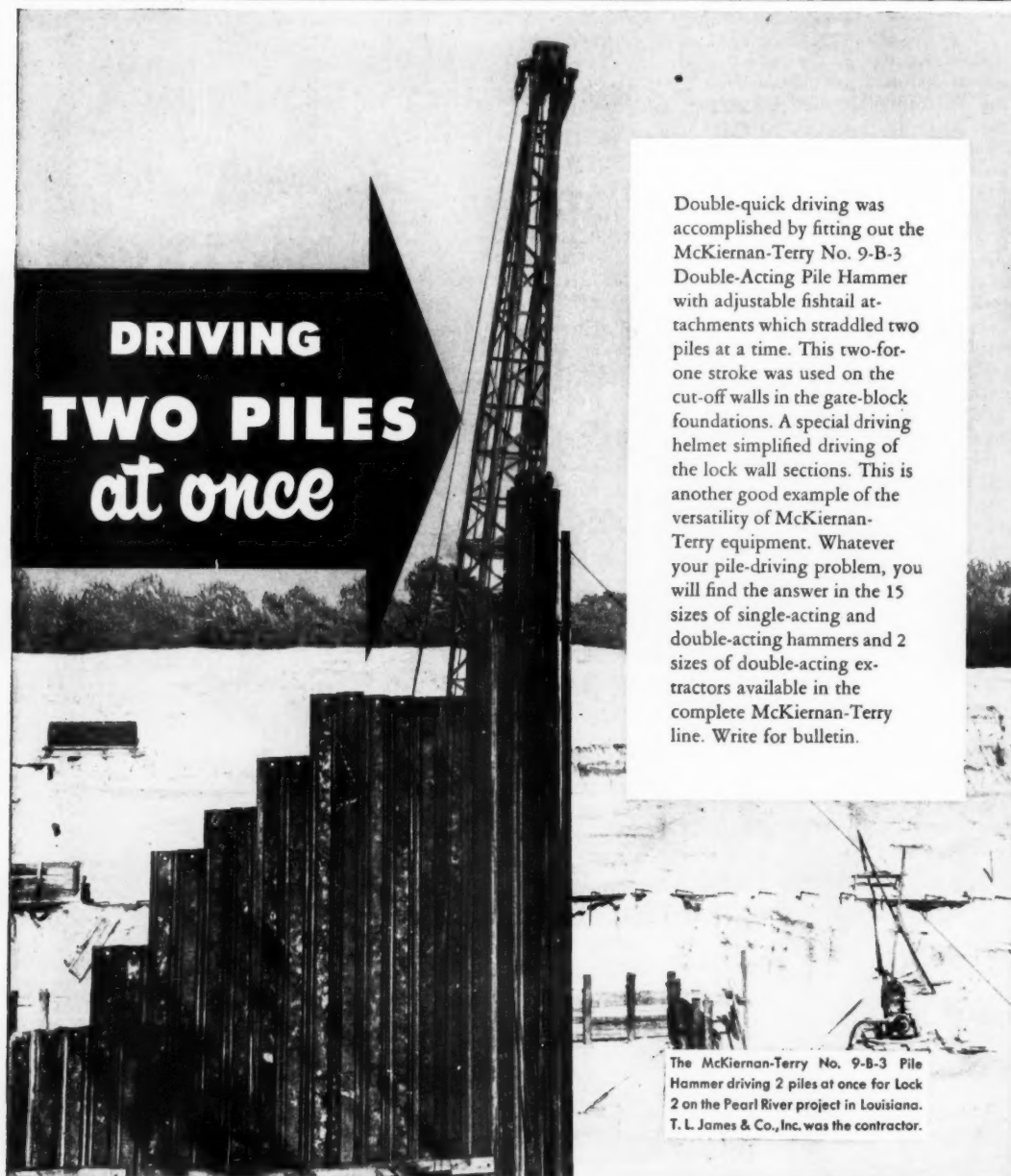
For further information write to the company, or use the Request Card at page 18. Circle No. 714.

Mahony-Troast's 25 Years

This year is the silver anniversary of Mahony-Troast Construction Co., Clifton, N. J. Paul L. Troast and Arthur S. Mahony opened the company in 1928 by renting desk space in the office of a Passaic, N. J., insurance company. The partnership soon moved to larger quarters and added a branch in Philadelphia, Pa. In 1933, Mr. Mahony, Vice President and General Manager, died, and Mr. Troast guided the firm through the depression into prosperous years.

Bayonne Naval Base and Wright Aeronautics Plant No. 7 are two wartime projects that earned for Mahony-Troast the Army-Navy "E" commendation. The company is versatile and will tackle any project from a 1,000-dollar local job to a multimillion-dollar construction. It has produced buildings for almost every branch of American industry.

DRIVING TWO PILES at once



Double-quick driving was accomplished by fitting out the McKiernan-Terry No. 9-B-3 Double-Acting Pile Hammer with adjustable fishtail attachments which straddled two piles at a time. This two-for-one stroke was used on the cut-off walls in the gate-block foundations. A special driving helmet simplified driving of the lock wall sections. This is another good example of the versatility of McKiernan-Terry equipment. Whatever your pile-driving problem, you will find the answer in the 15 sizes of single-acting and double-acting hammers and 2 sizes of double-acting extractors available in the complete McKiernan-Terry line. Write for bulletin.

The McKiernan-Terry No. 9-B-3 Pile Hammer driving 2 piles at once for Lock 2 on the Pearl River project in Louisiana. T. L. James & Co., Inc. was the contractor.

OTHER MCKIERNAN-TERRY PRODUCTS



MEAD-MORRISON COAL AND ORE UNLOADERS AND BRIDGES
Available in a variety of designs and in capacities of 300 to 1500 tons per hour. Exceptional durability proven by installations in service for half a century. Simple controls afford convenient, comfortable and speedy operation.



GRAB BUCKETS
Range of types and sizes take bulk materials loads up to 25 tons. Ruggedness without excess weight.



HONING UP TO 42-IN. I.D. X 55-FT. LONG
Typical of the extensive facilities of McKiernan-Terry for unusual jobs.



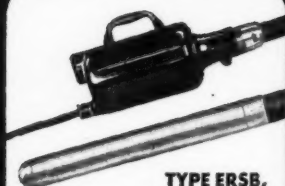
MCKIERNAN-TERRY CORPORATION • MANUFACTURING ENGINEERS • 19 PARK ROW, NEW YORK 38, N. Y.
Plants: Harrison, N. J. and Dover, N. J.

you can't **CONSOLIDATE** THIS CHEAPLY unless you can **CONSOLIDATE THIS FAST!**

VIBRO-PLUS ROLLGEAR*

internal vibrator

No other vibrator consolidates concrete as fast as Vibro-Plus because only Vibro-Plus has the patented Rollgear head — stepping up shaft speed to 11,000 to 15,000 VPM. This exclusive design eliminates gears, belts and clutches — minimizes wear, reduces down-time, cuts operating costs. That's why only Vibro-Plus is so fully satisfactory in performance. Write for illustrated bulletin and name of nearest distributor.



TYPE ERSB, electrically operated. Fully enclosed. Swivel or skid base. 20 or 30 ft. flexible shaft with snap coupling. Shaft can be lubricated in 15 seconds (even while running).

Head needs no lubrication ever. Interchangeable for gasoline or pneumatic drive. 1¾" — 2¾" — 4" heads. Grinding attachments available.

OUR ENGINEERING DEPT. will recommend, design and build special equipment for any special purpose.

*Reg. U. S. Pat. Off.



54-11 QUEENS BLVD., WOODSIDE, 77, N. Y.
WORLD PIONEERS IN APPLIED VIBRATION

CONTRACTORS AND ENGINEERS

Gravel Production By Heavy-Media Flotation

Feeding Material Into Heavy Liquid Enables Substance
Of Any Specific Gravity to Be Produced

By L. P. STRUBLE, JR., General Manager
Keystone Division, Dravo Corp., Pittsburgh, Pa.

A talk presented by Mr. Struble at the Annual Convention of the National Sand and Gravel Association and National Ready Mixed Concrete Association, in San Francisco, Calif., February 24, 1953.

• FOR a number of years our company has experimented with various ways of processing gravel to improve its performance in certain quality tests covered by the ASTM, with particular reference to the Los Angeles Rattler, ASTM C-131, and the Sodium Sulfate Test, ASTM C-88. In recent years, our concern has become greater as specification bodies have lowered the limits of these somewhat arbitrary tests. Present specifications of the Pennsylvania Department of Highways limit the rattler loss to 35 per cent at 500 revolutions and the sodium-sulfate loss to 10 per cent at 5 cycles.

Early Attempts

Early attempts at bettering the performance of our gravels in these tests involved the installation of several types of scrubbers including the Hardinge scrubber and the Alswede scrubber. These had beneficial effects, but none was sufficient to insure a safe margin in the test results. Variations in crushing procedures produced little change in test performance. A soft-stone eliminator of the impactor type was used experimentally but its effect on the material was very slight.

Several years ago, one of the trade magazines carried an account of a heavy-media plant used by the Royal Canadian Air Force in removing shale from a gravel deposit in the northern part of Canada. A follow-up on this put us in touch with the American Cyanamid Co. and, in the fall of 1949, Dravo shipped about 50 tons of 2¼-inch and 1¼-inch gravel to American Cyanamid's plant in Stamford, Conn. Here it was processed through a pilot heavy-media plant with very good results. We knew that soft particles, such as grainy sandstones, had lower specific gravities than did harder particles of gravel such as limestone, granite, etc. This pilot run proved that the laws of nature had not been altered. The light material floated and the heavy material sank. Tests run by Stanton's gang at the University of Maryland showed changes in rattler-test loss from 37 per cent to as low as 26 per cent. Sodium sulfate losses went from 8.7 per cent to 4.5 per cent. It is important to bear in mind that these were pilot tests and do not indicate the end result to be

expected in actual operation. There are economic limits to how far one can go and variations in deposit have an appreciable effect.

Design of the Plant

Layout and design were started in
(Continued on next page)

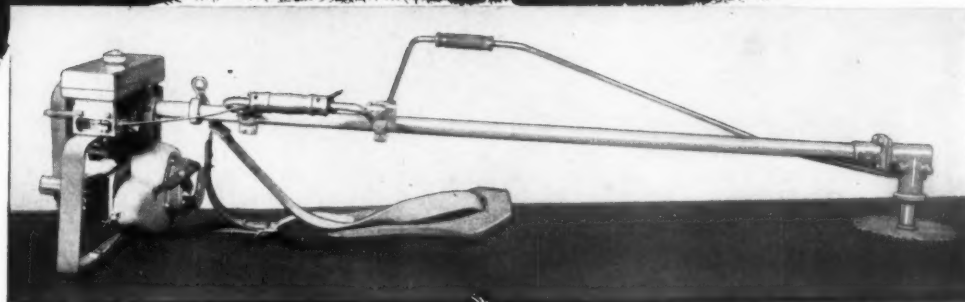


The heavy-media plant (right) is lashed to Dravo Corp.'s dredge No. 90. The plant is mounted on a separate hull 50 feet wide, 40 feet long, and 7 feet 6 inches deep.

BRUSHMASTER. CUTS COSTS! BRUSHCUTTING MACHINE HAILED BY INDUSTRY!

"According to my calculations, the two
BRUSHMASTERS would pay for themselves
in twenty-nine (29) working days."

SOUTHERN CANADA POWER CO.



BRUSHMASTER
DIRECT FACTORY
DEALERSHIPS
AVAILABLE!

- Choice territories now open
- Complete, free promotion plan
- Free inquiry referral plan.

Unusual opportunity! Sales of this revolutionary brush cutter practically assured by the complete sales promotion plan!

WRITE TODAY on your own letterhead for complete details of procuring a valuable Brushmaster Factory Dealership!



ONE MAN WITH
BRUSHMASTER
CLEARS BRUSH
Cheaper, Faster Than
6 Hand Cutters

- Lightweight (35 lbs.) . . . easily operated!
- Designed by arboriculture and forestry experts!
- Clears all undergrowth . . . even saplings to 4" diameter!
- Dependable, rugged . . . free from vibration!

This amazing new commercial brushcutting machine is the ONE LOGICAL METHOD of maintaining right-of-way clearances! Brambles, vines, bush, brush, briars . . . all undergrowth is quickly, easily, safely cleared by Brushmaster . . . and AT LESS COST! Exhaustively field tested under grueling conditions, Brushmaster is now hailed by hundreds of enthusiastic users!

Manufactured and sold in Canada by
H. & R. Arms Co., Ltd., Drummondville, Quebec
BRUSHMASTER SAW, INC.
Subsidiary of HARRINGTON & RICHARDSON ARMS CO.
ESTABLISHED 1871
WRITE TO: 290-G WEST ST., KEENE, N. H.

Gravel Production By Heavy-Media Flotation

(Continued from preceding page)

1949 and finally in 1952 Dravo ended up with the plant which is now in operation.

On the left of the photo on page 127 is the company's dredge No. 9 and to the right is the heavy-media plant, mounted on a separate hull which is lashed to the dredge. This hull is 50 feet wide, 40 feet long and 7 feet 6 inches deep. It is subdivided into 14 watertight compartments about the perimeter so that any one of them can be flooded without sinking the plant. It might be asked, why is the hull 10 feet wider than it is long? The answer is that the dredge is 50 feet wide and it was necessary to maintain this width for the plant hull. While the dredge and heavy-media plant

were engineered, designed, and built by Dravo Corp., much valuable advice was furnished by American Cyanamid and Western Machinery Co. Two conveyor belts from the heavy-media plant load barges when the plant is operating. A mousetrap can direct gravel to the barge-loading conveyor belts or to a belt which conveys the material to the heavy-media plant at the stern of the dredge.

Another feature of the plant is that the gravel feeds to the 8 x 8 Western Machinery Co. drum, which turns from 1 to 3 rpm. Media is also fed into the system at this point. We have been using powdered magnetite in the media—it is Fe_3O_4 , which is about the chemical analysis of rust. This magnetite is so fine that about 80 per cent passes a 100-mesh screen. The media consists of about 70 per cent magnetite and 30 per cent water by weight. Magnetite has

a specific gravity of 4.9. In our operations we have generally worked with a media specific gravity of 2.4. This, however, can be readily adjusted.

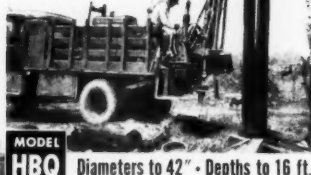
Densifier Is Stabilizing Factor

The densifier holds about 21 tons

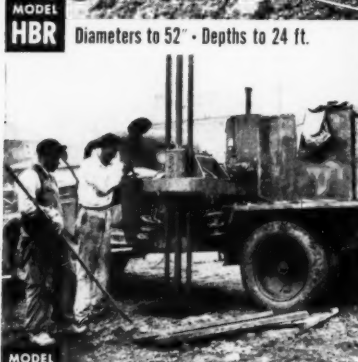
of magnetite. This is the stabilizer or the flywheel of the operation. Raising or lowering the feed screw in the densifier determines the amount of magnetite in the media circuit and consequently the specific gravity of the media. Essentially

You can depend on BUDA EARTH DRILLS...

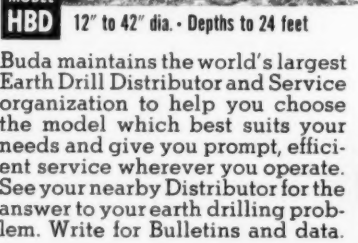
for
on the JOB
Efficiency...
Economy and
Service



MODEL HBQ Diameters to 42" - Depths to 16 ft.



MODEL HBB 12" to 30" dia. - Depths to 16 feet



MODEL HBL 6" to 18" holes - Depths to 100 ft.

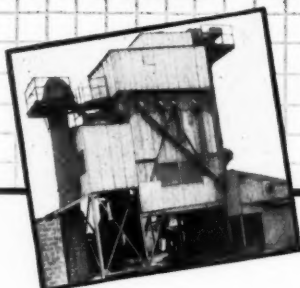
Buda maintains the world's largest Earth Drill Distributor and Service organization to help you choose the model which best suits your needs and give you prompt, efficient service wherever you operate. See your nearby Distributor for the answer to your earth drilling problem. Write for Bulletins and data.

Nation-Wide Service

Write for name of your nearby
Buda Earth Drill Distributor
THE BUDA COMPANY
HARVEY • ILLINOIS



Not "stocked" for Tom, Dick and Harry



But
**ENGINEERED
FOR YOU**

SAVE MONEY with IROQUOIS COMPLETE ASPHALT PLANTS

SEND FOR FREE BULLETINS

Iroquois Asphalt Plants	Bulletin No. 405
Iroquois Twin Shaft Pug Mill Mixers	Bulletin No. 402
Iroquois Asphalt Paving Tools	Bulletin No. 401
Iroquois Dryers	Bulletin No. 403

Stock assemblies often prove to be expensive misfits when used for asphalt preparation. An Iroquois Complete Asphalt Plant engineered—from feed to discharge—for your location... your type of mixing... your capacity requirement... costs you no more than a stock assembly. In addition, Iroquois' more efficient plant arrangement... Iroquois' improved equipment design... effect savings in labor and operating costs.

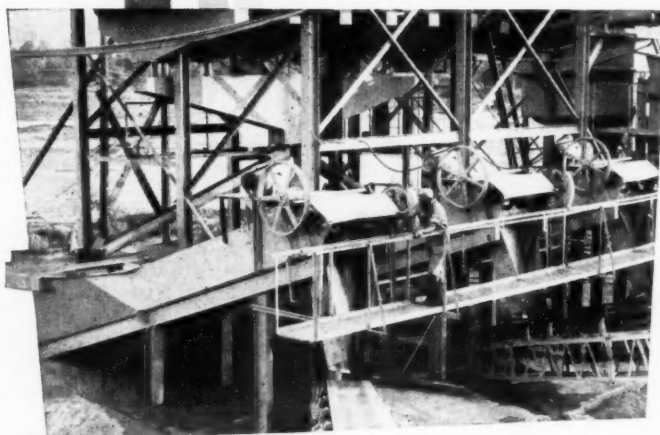


*Iroquois Division**
POSEY IRON WORKS, INC.

*Established over 60 Years
LANCASTER, PA.—New York Office: Graybar Building



**IT'S LIKE TURNING ON A FAUCET
TO GET THE SAND YOU WANT!**



The neat, highly efficient sand and gravel plant of Knox County Sand Co., Vincennes, Indiana, is pictured—but, it has to be seen to be appreciated. Material is pumped to the plant from a trim dredge equipped with an Eagle 10"—60" heavy duty Eagle "Swintek" Dredging Ladder.

The plant, designed by Eagle, is flexible. Produces one, two, or three gradations of material, one at a time or simultaneously. Dredged material is discharged in the pump box atop the plant. It is then screened. Material passing through screen flows to an Eagle 32" Double Water Scalping Tank. Coarse mesh sand settles at the inlet end of tank, less coarse sand settles near the middle and fine mesh sand at the far end. Excess water flows over adjustable weirs. From bottom of tanks sand flows to gathering flumes, then through adjustable bleeder gates to a divided triple blending flume. This flume controls the ratio of the size of material tumbled to the three Eagle 57" x 24" double screw Fine Material Washer-Classifiers-Dehydrators.

Gravel from the screen is chuted to an Eagle 7' x 20' Log Washer, shown at top right, which frees it of clay and silt. Knox has "on tap" material to any specification. Output averages 150-tons per hr.—17% gravel, 83% sand. Concrete sand is main product, but asphalt sand, mason sand and plaster sand are also produced—just like turning on a faucet! Why not investigate Eagle Equipment for your plant? Send for literature today!



**EAGLE
IRON WORKS**

159 Holcomb, Des Moines, Iowa

CONTRACTORS AND ENGINEERS

the magnetite in the densifier is "dry", at least it is not fluid.

The densifier screw operates continuously and feeds magnetite to a sump where the media is collected. A 6-inch pump delivers the media to the drum by the pipes shown. The turbulence in the sump, piping, and drum, keeps the magnetite in suspension.

The drum, of course, is about one-third full of media all the time and the weir height at this discharge opening is about 3 inches. Here the light gravel or the "float" discharges from the drum, to the float screen. The heavy gravel or the "sink" gravel falls to the bottom of the drum, where it is collected by lifter plates which are attached to the revolving drum. As the drum revolves, the gravel drops from the lifters onto a chute for delivery to the sink screen.

Float Screen and Sink Screen

The float screen removes the media from the gravel and then discharges the float material into one of two places. It can go to the waste well which empties into the river or it can discharge into a chute which delivers the float material to a bucket elevator. This, in turn, elevates it to a conveyor belt. This belt takes the float material back to the crusher on the dredge. To date we have not used this latter setup but we intend to experiment in the future and see if this float material cannot be crushed to sand and, at the same time, increase the fine percentage in our sand. Laboratory tests to date indicate that the blending of the sand product with natural sand improves the durability of concrete.

The sink material goes to a 6 x 16 Allis-Chalmers Low-Head screen where the media is washed from the gravel, and then, by means of its three decks, the gravel is graded to meet final specifications.

The process of reclaiming media is the same for both the float screen and the sink screen. This is what happens on the sink screen. There is a swinging door or baffle located about a third of the way along the screen. Between the back end of the screen and the baffle, which is adjustable, about 90 per cent of the media falls from the gravel, goes down a chute into the media-collecting sump where it is blended with the rest of the media in the system. Since no water has been added up to this point, the specific gravity of this media is the same as it was in the drum. Beyond the point of this baffle, there are spray pipes and it is here that the remaining 10 per cent of the media is washed from the gravel. During this process, since no water is used to spray the gravel, the media is diluted. This diluted media falls into a pan and goes through a magnetizing coil which magnetizes the media and causes it to cling together in large particles.

Magnetizing and Demagnetizing

Magnetized media is next passed through two belt-type magnetic separators which operate in series. Each separator has a rubber conveyor belt which passes below a set of magnets in the diluted media. As the diluted media passes along this belt, the magnetite is held against

the belt and travels along to the discharge end. The nonmagnetic material and the water go overboard as waste. The magnetite carried by the belt to the discharge end of the separator is directed into a chute and thence to a 3-inch Wemco media-recovery pump which pumps the media mixture to the Western Machinery densifier. At this point, the media is not completely dry and it is necessary to return it to the densifier to eliminate excess water. This excess water overflows from the densifier and just to make sure that it is not carrying media to waste, is returned to the magnetic separator. All nonmagnetic material, as well as the excess water, discharges from the magnetic separator overboard.

In addition to having a magnetizing coil at the feed end of the magnetic separators, we have a demag-

netizing coil on the media discharge from the densifier. This coil does just exactly what its name suggests, it demagnetizes the media and thus allows it to remain a finely ground power with no magnetic attraction between particles. The diluted media enters the machine on the left. Magnetic attraction holds the magnetics against the belt as it travels to the right. At the extreme right, when the belt leaves the magnetic field, the magnetite particles are dropped into a hopper for return to the densifier.

In the heavy-media plant both the float screen and the sink screen are close together. At the time the picture was taken, we were using a circular separator but since then we have installed two belt separators. The action of the two separators is about the same, but we decided that we would have less maintenance

problems with the belt separators. On the right is the end of the densifier and it travels almost all of the way across the back of the plant.

Problems Still to Be Solved

Dravo operated this plant at various times last year and our experience has indicated that it will do the job for which it was built. However, there are a number of problems that remain to be worked out. One of the more important problems is that of obtaining a closer classification of material in the drum. The separation of the larger particles of gravel is pretty well defined, but when we get down into the smaller sizes, we find that the smaller particles do not sink as readily, with the consequent result that a fair amount of good material passes out with the float product.

(Concluded on next page)

Lay TEN TIMES MORE PIPE PER POUND OF MATERIAL HANDLED

Armco Corrugated Metal Pipe is strong, yet light in weight. In contrast, rigid sectional pipe and monolithic box structures of the same capacity weigh about ten times as much. This means you can install ten times more Armco Pipe per pound of material handled.

With the high cost of today's labor and equipment, this savings in handling can be tremendous. In addition, installation goes along faster and easier. Jobs are completed ahead of schedule. This means more profit for you.

But let's get specific. Suppose you need a 15-inch diameter culvert, 40 feet long.

Then you should have two 20-foot lengths of Armco Pipe, plus one coupling band. Each 20-foot length, in 16-gage, weighs 260 pounds. So the total handling weight, including coupling band, would be *only 530 pounds*—an easy, two-man task.

There is an Armco Drainage Structure to answer almost every drainage problem—in the right style, size and protective coating. Write us for recommendations. Armco Drainage & Metal Products, Inc., 4382 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES



This truck is carrying 408 feet of Armco Pipe, ranging from 12 to 60 inches in diameter.

Gravel Production By Heavy-Media Flotation

(Continued from preceding page)

Where it once was difficult to obtain gravel with a rattler loss below 35 per cent, we have been able to produce some with a loss as low as 29 per cent. Sodium-sulfate losses have been decreased from upwards of 8 per cent to around 4 per cent. Of course, various operating specific gravities of the media will have various effects on the results of these two tests. As the specific gravity increases, the rattler loss decreases, as does the sodium-sulfate loss.

We have not yet been able to plot curves for the product of our heavy-media plant. However, the information we have collected indicates that operating results will closely follow the pilot-plant data. Due to mechanical conditions, it appears that

the percentage of float will be higher than that experienced in the pilot run.

There are economical limits to the specific gravities at which we can operate. It is one thing to operate with a float loss of 20 per cent and another thing to have a float loss upwards of 50 per cent. Furthermore, I believe that it is not necessary to produce material with extremely low rattler losses and sulfate losses. The bad actors in gravel deposits are removed at relatively low specific gravities, and further refinement insofar as these tests are concerned is not necessary.

Investigation of the specific gravity and absorption of gravel processed through the heavy-media pilot plant correlates the test data already given.

As the specific gravity of the media increases, more of the porous material is thrown out or rejected.

We don't have a series of curves for the production of our plant but samples collected of one run showed a comparable specific gravity of 2.58 and an absorption of 1.8. Since absorption and void content of aggregate are considered factors in the durability of concrete, it can be seen what a beneficial effect the heavy-media process has in this regard.

By means of heavy liquids, acetylene-tetra bromide and carbon tetrachloride, we have been able to determine the analysis of our gravel from a specific-gravity standpoint. There is only a small range of separation with which we can work.

I am not trying to convince everyone in the sand and gravel business to get busy and install a heavy-media plant. In fact, I wish to caution anyone who is interested in such a move to make a complete series of tests on the deposit involved. The specific gravities of deposits will undoubtedly vary and it is entirely possible that deleterious material will not be removed by flotation.

Our plant is still in the experimental stage and we have a lot to learn about its operation and potentialities. It has demonstrated that it will effectively remove soft sandstone, coal, wood, and so on. We hope that its operation will be a milestone in the progress of our industry in its efforts to produce an ever-better product for its customers.

Trailer for Conveyor

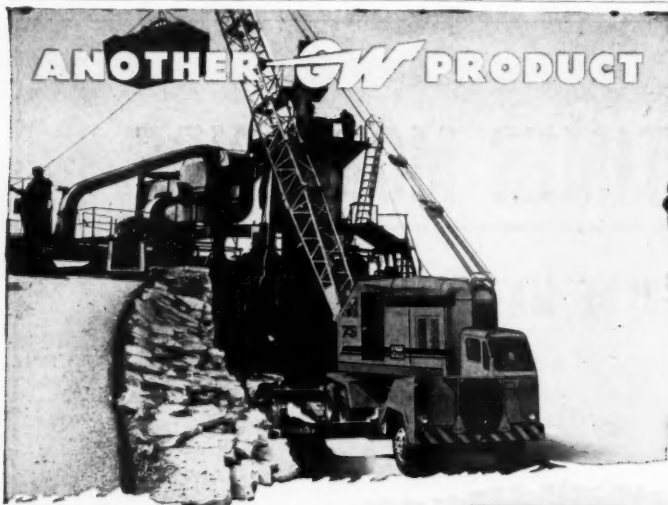
A 2-wheel trailer-mounting with winch hoist is available for the Brik-Toter masonry conveyor manufactured by the Mar-Rail Conveyor Co., 560 York Ave., Pawtucket, R. I. The Model 20 trailer hoist is optional for all 15, 20, and 24-foot belts.



With the trailer attachment the conveyor can now be hitched to a car or truck for transportation. According to the manufacturer, the new rig also makes it possible for one man to raise and operate the conveyor.

For further information write to the company, or use the Request Card at page 18. Circle No. 840.

Help train the engineers needed in underdeveloped countries. Your contribution to the CARE Book Fund, 20 Broad St., New York 5, N. Y., can provide new American engineering books for foreign universities and libraries.



GarWood75

A Heavy-Duty Truck Crane that can Lift up to 20 Tons!

Gar Wood's 75BT truck crane gives you a specially designed, heavy-duty chassis for mobility and speed with full 40,000 lb. lifting capacity . . . Folding boom for easier handling in heavy traffic . . . High gantry, optional fluid coupling to absorb shock loads and power load lowering can't be beat for smooth, precision work! . . . Power actuated mechanical drum clutches, exclusive right angle drive, conical hook rollers and many other operating advantages for faster, easier work . . . The 75BT truck crane is quickly convertible to all attachments including the new, exclusive, profit-making Gar Wood Foundation Borer — the machine that bores and bells in one fast operation . . . Get details from your dealer—

TWO CRAWLER MOUNTED CRANES!

Standard-duty 75A and heavy-duty 75B models. With 35 ft. boom on 12 ft. radius a 75A lifts 16,500 lbs. and a 75B, 21,200 lbs. . . . Both are easily convertible in the field!



F-330



GAR WOOD INDUSTRIES, INC.
Findlay Division • Executive Offices • Wayne, Michigan



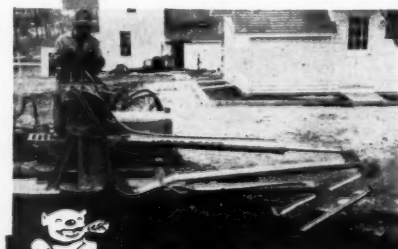
Low Cost HOPTO DIGGER

Digs, Trenches, Loads, **FASTER, EASIER!**

Hydraulically operated HOPTO is the *handy man on a hundred jobs!* Digs deep, lifts high thru full 180° swing. Conveniently located controls make the operation of a HOPTO Digger practically effortless.

Skeleton type and half-shell buckets handle any type of soil. Back-hoe and shovel buckets are quickly interchangeable. HOPTO may easily be equipped with a crane for grapple or hook work.

Here are some of the jobs that HOPTO can do for **YOU** . . . at lower cost and with lower equipment investment: Excavate for footings and foundations, dig ditches and trenches, spot timbers and steel, handle aggregate, load rock and building stone . . . and hundreds of other tedious jobs that become profit pushovers when HOPTO 'hops to'!



MODELS FOR EVERY USE

HOPTO is available as a self-powered trailer-type unit, as a truck or crawler-type tractor mounted unit and as a trailer type to operate from the power take-off of tractors, trucks or jeeps. Get complete specifications.

WRITE TODAY!

for complete information on the model to meet your needs.



BADGER MACHINE CO.

WINONA, MINNESOTA

DEPT. E

CONTRACTORS AND ENGINEERS

Straits of Mackinac Are To Be Bridged

The Department of the Army has approved plans to construct a 4-lane suspension bridge across the Straits of Mackinac, linking the southern and northern peninsulas of Michigan. The bridge will run between the towns of Mackinaw City and St. Ignace.

The Mackinac Bridge Authority, responsible for the construction of the new bridge, has as its Consulting Engineer Dr. D. B. Steinman of New York City. The estimated total cost of the bridge is \$95,000,000. Two contracts have already been awarded: Merritt-Chapman & Scott Corp., New York, N. Y., has a \$24,525,600 contract for the substructure work, involving the construction of 34 water piers varying in depth from 50 to 200 feet below mean water level; and the American Bridge Division of United States Steel Corp., Pittsburgh, Pa., was awarded a \$41,544,563 contract for the steel superstructure, which includes 9,304 feet of varying-length truss spans and the longest suspension bridge in the world (8,614 feet from anchorage to anchorage). The main span of the suspension bridge will be 3,800 feet long and will be second only to the Golden Gate Bridge, San Francisco, and 300 feet longer than New York City's George Washington Bridge.

In addition to the work already under contract, there will be 8,267 feet of approach roads and viaduct

structures in the project. The construction schedule calls for the opening of the Mackinac Straits Bridge to traffic by November 1, 1956. The bridge will replace existing ferries, which have caused long waits for motorists, varying from 1½ hours in the fall and winter to 2½ hours during the summer. Not only will the new bridge cut crossing time from approximately 53 to 10 minutes, but due to its singular strategic location, it will assume great importance in national defense for the rapid movement of military vehicles. It will provide the only direct highway link from southern Michigan to the important Sault locks.

Bids are being invited for a \$96,000,000 bond issue to finance the Mackinac Straits Bridge. The bonds will have a maturity date of January 1, 1993, but it is expected that they can be retired by 1980.

Masonry Waterproofing

A series of bulletins on exterior waterproofing of masonry structures is available from the Wurdack Chemical Co., 4942 Fyler Ave., St. Louis 9, Mo. The company's silicone-type water repellent, Crystal, is said to prevent efflorescence, retard staining and protect masonry joints. Each bulletin discusses one or more of these waterproofing problems.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 857.

Resurfacing A Major Highway without closing it to traffic



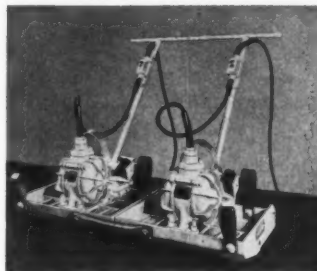
with the H & B MOTO-PAVER



While designed primarily for resurfacing work on secondary roads and city streets, the Moto-Paver here demonstrates its efficiency in resurfacing a major highway. Traffic was maintained on this highway—one of the busiest in the East—while the work was being done. The lower picture shows aggregate being dumped into the Moto-Paver hopper on the job.

The Moto-Paver does the complete mixing and laying job—in one continuous operation, using beach sand, gravel, crushed stone or slag aggregates, and tars, cutback asphalts, road oils, emulsions or other bituminous materials. Road speeds up to 25 mph make possible quick moves from job to job. For specifications and complete information see your local H & B distributor or write for Bulletin MP-43.

HETHERINGTON & BERNER INC. • Engineers—Manufacturers
731 Kentucky Avenue Indianapolis 7, Indiana



The Jackson vibrator two-abreast hookup is 4 feet wide.



The two-in-line version—travel is directed by pivoting the rear compactor.

Vibratory Compactors Come in Teams of Two

The manually guided self-propelled Jackson vibrator compactor is now available in teams of two-abreast and two-in-line to increase working capacity.

The two-abreast hookup has a total width of 4 feet. In the two-in-

line version, the operator directs travel by pivoting the rear compactor. Attachments for double hookup are available to contractors who have two or more Jackson compactors.

For further information write to Jackson Vibrators, Inc., Ludington, Mich., or use the Request Card at page 18. Circle No. 772.



GarWood 75

A New 3/4 yd. Shovel with Many Exclusive Features!

Gar Wood has designed the new "75 series" shovels to combine many new and exclusive operating features with time-tested standards of advanced design and rugged construction . . . Both the standard-duty 75A and the heavy-duty 75B have power actuated mechanical drum clutches, right angle drive, independent chain crowd, power steering, independent travel, conical hook rollers to eliminate rocking and an optional hydraulic coupling to absorb shock loads . . . Easy field conversion for crane, clam, dragline, magnet, pile driver or trench hoe work . . . Don't miss checking the profit potentials of the exclusive new Gar Wood Foundation Borer—the machine that bores and bells in one operation . . . See your dealer for details—

EASY CONVERSION IS A FEATURE



Your Gar Wood shovel can be quickly adapted for trench hoe work. Digs up to 17'10" depth, dumps at heights up to 19'3". Standard 40" dipper. 36", 31" and 26" widths optional.

GAR WOOD INDUSTRIES, INC.
Findlay Division • Executive Offices • Wayne, Michigan



F-533

Concrete Industry Looks to the Future

With the ambitious topic "The Concrete Industry Looks to the Future" as the subject for discussion, the Concrete Industry Board of the New York Building Trades Employers Association held its monthly meeting in New York City on March 16. Roger H. Corbetta, contractor, and Chairman of the CIB, urged the members to take an interest in all new developments in concrete construction, and suggested that they could do their clients a good turn by looking into the future themselves for possible applications of reinforced concrete.

Captain Emil H. Praeger of Madison-Hyland, consulting engineer, New York City, opened the discus-

sion with an illustrated lecture in which he stated that "we have only scratched the surface, and have by no means reached the limit in what we can do with reinforced concrete." Praeger pointed out that the concrete industry is only about 50 years old, and that many structures have been built of concrete that could not be built with any other material.

According to Praeger, Europe is far ahead of this country in what it has done with concrete, and mentioned, as examples, the development of 10,000-psi concrete in France, and the use of no-slump concrete in England. The consultant felt that good progress in concrete building construction had been made in California, perforce of necessity, since structural steel had not been so economical because of the dis-

tance from the steel mills. Los Angeles had built a public library of reinforced concrete in the 1920's that cost less than \$1,500,000. Praeger stated, while the New York Public Library constructed of stone cost from \$12,000,000 to \$15,000,000. More monumental buildings could be built of reinforced concrete, the speaker suggested, and cited New York's Church of the Heavenly Rest as an early (1927) example of rigid-frame construction.

"The Japanese are no slouches when it comes to concrete," Praeger declared. He showed slides of their prewar precast-concrete piers, and also views of reinforced concrete bomb shelters and a hospital that withstood the Hiroshima atom bomb. The hospital was only one mile from zero point. "When they ran out

of steel they used bamboo to reinforce their concrete," the ex-Army captain revealed, "but it wasn't much good."

A. E. Cummings of Raymond Concrete Pile Co., New York, told of the progress his company had made in developing a new prestressed pile to support oil-well-drilling platforms in the Gulf of Mexico. These concrete piles are hollow with a 36-inch OD and a 28-inch ID. The 8-inch-thick shell is spiral-reinforced and is cast in 16-foot lengths. Vertical core holes are formed in the shell to permit the entry of prestressing cables that join the sections together to form one pile over 150 feet long. A cable consists of twelve No. 6 wires which are stressed with a 25-ton force by Freyssinet hydraulic jacks. Cables are later grouted in from one end.

Piles are driven with the bottom end open, and a special driving bonnet on top, by one of Raymond's big floating rigs. The well-drilling platforms require from 4 to 8 piles driven deep into the Gulf bottom. In some places several platforms are built close together, and are connected by catwalks.

Ready-mix concrete will be discussed at the April meeting of the Concrete Industry Board.

the PFAFF & KENDALL story at Seaside Heights, N. J....

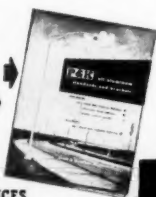
With the rolling Atlantic on one side and picturesque Barnegat Bay on the other, it's no wonder this quarter-mile wide peninsula is so popular with vacationists during summer months. Sun... and sea air heavy with salt and iodine... calm the tensions of thousands of city dwellers every season!

But calm becomes calamity to the ordinary light pole when salt, iodine, high winter winds and frequent storms combine. Damage, maintenance and replacement costs become excessive... needlessly!

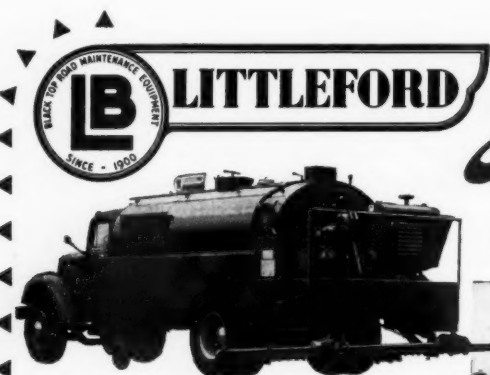
The P & K installation three years ago along the Barnegat Bay Bridge area has required not one penny's worth of maintenance! The P & K All-Aluminum Standards and Brackets are in good condition and appearance... despite the hurricane of November, 1950, which struck with great severity along the Atlantic Coast.

P & K All-Aluminum lighting standards and brackets, 30 ft. high, installed with mercury-vapor luminaires on New Jersey seacoast Route 37, Seaside Heights, N. J.

WRITE FOR LATEST P & K CATALOG... AND USE THE P & K PLANNING AND ADVISORY SERVICES WITHOUT OBLIGATION



P faff & K endall
84 Foundry Street
Newark 5, New Jersey



Here's the Bituminous Spraying unit that will handle Asphalt, Tar, Emulsions, Cut-Back and Road Oils for any road maintenance or construction work. It's engineered to operate with the minimum of cost and designed to eliminate valves, pipe lines and controls, making it simple to operate.

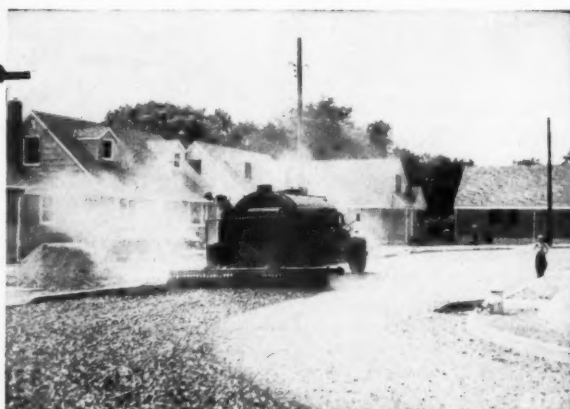
Spray Bars operate up to 24 ft. in width, both the Standard Suck-Back Bar or the Full Circulating Vacuum Flow Bar give 100% efficient spraying action.

Littleford "Spray-Master" Bituminous Distributors are the most modern units on the market today. Made in either truck mounted or semi-trailer models. Sizes range from 800 to 4000 gallons.

"Spray-Master" Distributors are fast heating, safe, efficient, low-cost in operation. See your nearest Littleford Dealer or write.

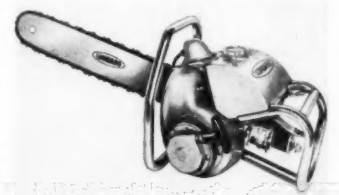
LITTLEFORD BROS., INC., 485 EAST PEARL STREET, CINCINNATI 2, OHIO,

"Spray-Master"
BITUMINOUS DISTRIBUTOR
Gives Low Cost • Mix in Place • Seal Coat Jobs



New Model Chain Saw

A new chain saw with increased power is announced by Lombard Governor Corp., 36 Main St., Ashland, Mass. The Woodlot Wonder



features automatic oil shutoff and improved chain-tension adjustment. The carburetor is attached directly to the crankcase for compactness. A new spike bumper-grip design allows straight limbing cuts from any angle, and close-to-the-ground cutting, the company points out.

For further information write to the company, or use the Request Card at page 18. Circle No. 880.

Wire-Rope Advice

A booklet whose purpose is to recommend wire rope for each major type of equipment used by contractors is available from the American Chain & Cable Co., Inc., 929 Connecticut Ave., Bridgeport, Conn. Recommendations for bulldozers, backfillers, angle dozers, and skimmers are included.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 756.

Catalog of V-Belts

A new 8-page catalog on V-Belts for industrial use is available from Thermoid Co., 200 Whitehead Road, Trenton, N. J. Tables help the reader to choose the correct Thermoid belt for replacements. Prices, dimensions, etc., are presented.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 761.

Sandwich-Type Wall For Aircraft Plant

Manufacturers of architectural, marine, and industrial porcelain products, Seaporcel Metals, 28-20 Borden Ave., Long Island City 1, N. Y., have introduced a new lightweight, laminated, sandwich-type curtain-wall material with aluminum facing.

This adaptation of the recently developed Seaporcelad wall panel material will have its first application in the exterior construction of the new Peconic River Plant Administration Building of the Grumman Aircraft Corp. located at Calverton, L. I.

Approximately 3,300 square feet of wall area will be constructed of the new material, with individual panels measuring 5 feet high x 7 feet in length. Each panel will have a front face of 20-gage anodized aluminum, a 4-inch insulating core of Celotex, and a 20-gage sheet-steel backing.

The insulating properties of the material are said to be the equivalent of 12 inches in masonry construction. Its light weight and large unit size cut down on building labor and produce considerable savings in structural steel and foundation requirements. The anodized aluminum facing provides an esthetically pleasing silvery-gray color and requires no painting.

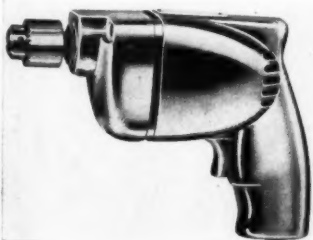
Seaporcelad curtain-wall panels are being produced in sizes up to 5x10 feet, with faces of architectural porcelain, aluminum, steel, and other materials, and with cores of various thicknesses. Aside from fabricating the panels, the company will also install them.

Tractor Loader Discussed

Literature on a hydraulic front-end loader that mounts on tractors is offered by the Wagner Iron Works, 1905 S. 1st St., Milwaukee 7, Wis. The Model WM-4 produces a 1,000-pound load lift.

Structural features and specifications of the loader are given. Attachments shown include a combination coal and snow bucket, a crane lift, and a backfill blade. The company makes over 40 models to fit most tractors.

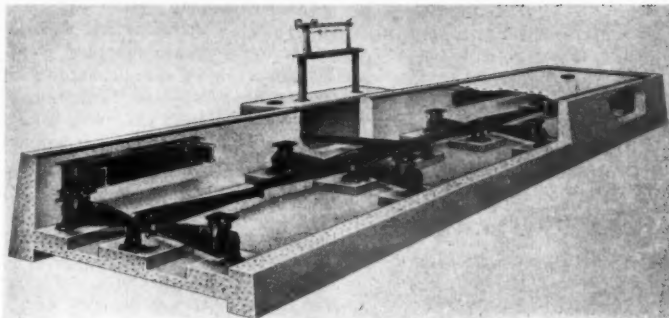
To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 746.



The Cummins Ball Rite 44 drill made by Cummins-Chicago Corp., 4740 N. Ravenswood Ave., Chicago, Ill., has a double-coil motor, full-grip handle, and geared chuck. For further information write to the company, or use the Request Card at page 18. Circle No. 765.

Don't forget the ARK collection—American Relief for Korea is calling for warm clothing and blankets.

APRIL, 1953



A cutaway of the Howe Motor truck scale.

New Motor-Truck Scale

A 4-section straight-lever motor-truck scale is announced by the Howe Scale Co., Rutland, Vt. The scale has a capacity of 50 tons. Platform sizes are 45, 50 or 60 feet long x 10 feet wide.

Inside anti-friction plates are used

to give proper clearances and are said to eliminate all lateral motion. Pivots are made with square ends without anti-friction points. These points are on the main bearings and anti-friction plates are attached to the levers to absorb side thrusts, thus eliminating breakage of pivots at the anti-friction points, the manu-

facturer points out.

For further information write to the company, or use the Request Card at page 18. Circle No. 798.

L. P. Gas-Fired Heater

A folder describes a liquid-petroleum gas-fired portable heater made by International Mfg. Co., 2249 S. Delaware, Denver 10, Colo. It illustrates three models of the Chinook Wind heater, which has a top discharge rating of 500,000 Btu. The deluxe model, weighing 170 pounds, has a twin adapter for one or two ducts; the utility model weighs 150 pounds; and the light weight Little Chinook Wind, 35 pounds.

The folder also shows a heating torch that works on propane or butane gas.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 773.

SCHRAMM

MODEL 600

Diesel Engine Driven Air Compressor



Fuel Savings Up To 50%

Pneumostat, simple and rugged . . . Proper Speeds . . . Less horsepower required . . . Cam operated mechanical intake valves, greater volumetric efficiency. There you have some of the many features in the new Schramm Model 600 Air Compressor . . . features that mean economy while supplying you with 600 cubic feet actual air delivery.

SIMPLIFIED DESIGN

You will like its streamlined, simplified design, too—fewer parts . . . watercooled enabling operation with doors closed . . . Dual fan belts . . . Engine and compressor speeds designed to operate at maximum Diesel Engine efficiency.

Don't delay. Write today for Bulletin 5101A on this great, new Model 600 Schramm Air Compressor.

SCHRAMM INC.

The Compressor People

WEST CHESTER

PENNSYLVANIA

Mulching Practices In Seeding Roadsides

Benefits, Types of Mulch, Rates and Methods of Application Are Summarized; Research Still Needed to Reduce Costs

• THE Highway Research Board of Washington, D. C., has just made available Roadside Memorandum 6 covering "Mulching on Roadsides". This circular No. 189 is part of the activities of the HRB Committee on Roadside Development, which is headed by Chairman Harold J. Neale, Landscape Engineer of the Virginia Department of Highways. A review of current practices in

mulching and a report on the newer types of mulch materials are included in the summary which follows.

Mulch plays an important part in modern roadside-erosion control. It both reduces soil movement and protects and encourages the establishment of grass and other ground cover. Mulching, in one of several forms, has been practiced in agri-

culture for many years. During the past decade there has been a marked improvement in adapting proven basic principles of mulching to roadside conditions and in developing new mulching techniques, notably mechanizing mulch application and simplifying methods of holding mulch in place.

When first used on roadsides, mulching was a laborious operation for special locations only. However, its use quickly spread to all steep cut slopes, then to all cut slopes, and currently is finding considerable favor as an integral part of all roadside speeding, including shoulders and fill slopes.

Mulching, as dealt with here, means an application of a surface cover of straw, hay, or other material, with only such incorporation into the soil as may be needed to hold the mulch in place. It does not cover mulch fully incorporated into

the soil as a soil amendment, nor does it include the agricultural tillage practice of soil-mulch or dust-mulch.

Reasons for Mulching

Principal benefits of mulch on roadside areas are that (1) by intercepting raindrops, it reduces their force, breaking them into droplets or spray having too little energy to seal over soil pores, and in this way increasing absorption of water; (2) it conserves soil moisture by reducing evaporation; (3) it reduces movement of soil, seed, and young seedlings by water, wind, or frost heaving; (4) it gives protection to young seedlings against sun, drying winds, and wide fluctuations in soil temperature; and (5) it slowly but eventually adds organic matter to roadside soil usually low in organic content.

These technical benefits help in the establishment of turf or other ground cover on roadsides, but there are still other benefits from mulch which might be called administrative advantages. One is the economy of using mulch directly on raw soil instead of topsoiling. Another is the usefulness of mulch in "stretching" the seeding season. Highway construction projects are completed at all times of the year and not just during optimum seeding seasons. This new construction needs immediate protection against erosion, and mulch helps greatly in establishing vegetative cover during those periods usually considered as off-seasons. Of course, mulch is no panacea or unquestionable guarantee, but it reduces the gamble of off-season seeding to the point where quick protection against erosion far outweighs an occasional failure. In fact, under weather conditions too adverse to risk seeding, mulch alone will give a high degree of protection against erosion until such time as seeding can be done safely.

In some cases, mulching without seeding is done out of season not only as an immediate erosion deterrent but also as a means of improving the physical condition of a soil area, such as a steep slope, that is hard to reach with machinery for seedbed preparation. The absorption of moisture and the mellowing of the soil by mild freezing and thawing provides a seedbed which, though not ideal, is satisfactory for seed which is sown through the mulch during the proper season.

Mulching is not without disadvantages. In some states, particularly in forested area, no mulching is done because of the danger of serious fires. Partial incorporation of mulch into the soil lessens this danger. Even where surface mulches are used, experience seems to indicate a lesser fire hazard than at first thought. Some mulch materials might become a haven for insect pests, and some might be a source of weeds. Addition of organic matter to the soil has been listed as a benefit, but the process of decomposition consumes nitrogen and it is therefore frequently necessary to fertilize mulched areas one or more times in order to offset this nitrogen loss.

In general, however, and considering the country as a whole, the benefits of mulching on roadsides far out-

Moves big payloads faster



—at lower cost

Big earth-moving vehicles like this twin-engine self-loading scraper get more work done faster because of Allison TORQMATIC DRIVES. These time-proved hydraulic drives—more than 10,000 have been built for Army tanks and heavy-duty vehicles—make multiple engine applications possible—and practical.

TORQMATIC DRIVE provides a smooth, steady, oil-cushioned flow of power—high-starting torque with uninterrupted acceleration—protection against shock-

load damage to engines and equipment. It eliminates engine lugging and stalling while maintaining power to drive wheels at all times. This permits the engine to operate in its most effective speed range by balancing engine power with load requirements.

Users of trucks, scrapers and other vehicles equipped with TORQMATIC DRIVE report up to 30% more work done and 15% less cost per yard than with a mechanical drive—additional good reasons why engineers are designing Allison TORQMATIC DRIVES

into all types of heavy-duty equipment.

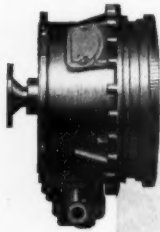
Allison TORQMATIC DRIVES are the only heavy-duty full torque-shifting vehicle transmissions available today—engineered for compactness, permitting flexibility of drive-train design for today's and tomorrow's vehicles.

Like to know more about TORQMATIC DRIVES? Write us for Engineering Data Bulletin which gives full specifications.

ALLISON Division of GENERAL MOTORS
Box 8948S, Indianapolis 6, Indiana



Allison TORQMATIC DRIVES



Compact, efficient hydraulic drive for . . .



CRANES



TRACTORS



TRUCKS



SHOVELS



LOCOMOTIVES



DRILLING RIGS

weigh the disadvantages.

Types of Mulch Material

Organic material is the predominant type of mulch. Long recommended and used have been hardwood or pine litter, hardwood brush, and pine branches. These materials, however, are not particularly suited to roadside-mulching operations because of the difficulty of obtaining them in sufficient quantities and difficulty of application.

The most widely used roadside mulch materials are grain straw, hay, and roadside mowings. (In the case of hay, its use is frequently limited to that which is unfit for feed.) Straw and hay can be bought in quantity in bales which are easy to store, transport and handle. On the other hand, if roadside mowings are available in sufficient quantity and do not have an objectionable weed content, their use can reduce cash expenditure for mulch. Even when roadside cuttings are baled for easier handling, material costs are appreciably reduced.

Many other organic materials have been used successfully in roadside mulching, but most of them have only local application because of a limited supply. Such materials as sawdust, wood chips, bark litter, weathered cane bagasse, peat, peat moss, tobacco stems, cottonseed hulls, and threshed soybean plants have been used.

In some states where the use of a quick cover crop is standard erosion-control practice to give protection until a spring or autumn seeding season, this cover crop is allowed to grow to maturity, then is cut and used as mulch at the time permanent seeding is done. This growing of mulch "in place", so to speak, does not always provide all the mulch needed for a given area, but it can make sizable reductions in purchase, transportation, and handling costs after having already served its purpose for temporary erosion-control.

An important material is "seed mulch". This is mature, unthreshed (or, in some cases, partly threshed) grain or grasses which, when applied as mulch to the roadside area, disseminates seed that germinates and provides a desirable cover, thus combining the advantages of inexpensive seed and reduced field operations.

Inorganic materials are also useful as mulch. Asphalt has been successfully used in some regions under suitable soil conditions. After proper soil preparation, seeding, and rolling, a thin film of asphalt material is sprayed over the seeded area to hold the soil in place until the seed germinates. The seedlings break through the thin asphalt coating or through the checks which develop in the asphalt. Not just any asphalt can be used; a specially refined cutback asphalt has been patented and manufactured, and asphalt emulsions have also been used for this type of mulching.

Under some climatic and soil conditions, gravel, sand, and cinders have served well as mulch. Now in progress are experiments testing synthetic resins which are sprayed on roadside areas in combination with seed and fertilizer in water suspension. These materials form a thin film over the soil to prevent

displacement of soil and seed until germination occurs.

Rate of Application

Up to the present time, organic mulches have been by far the most widely used. But, with all the past experience, it is impossible to make a satisfactory uniform recommendation on the rate of application of mulch. The wide variations in type of mulch material used; its weight, texture, moisture content, or other factors of physical condition; and soil and temperature conditions prevent accurate specifications on application. Mulch has been variously specified on the basis of tons per acre, inches of thickness of many straws thick, or percentage of ground surface covered by the mulch. Specifications have varied from 2 to 5 tons per acre, 1 to 6 inches in depth, and 3 to 6 straws in thickness.

The rate of application of mulch must be determined individually for varying conditions encountered, keeping in mind the basic purpose of breaking the force of rain, conserving moisture, and shading seedlings while allowing some sunlight to penetrate and air to circulate.

Methods of Mulch Application

As the value of mulching in roadside-erosion control became recognized, it was apparent that the slowness and cost of the operation limited its widespread use. In recent years, this limitation has been overcome by mechanization. Since a large part of the cost was in placing mulch by hand, an operation that becomes increasingly difficult as slopes become steeper, a relatively new machine—the mulch blower—is slashing application costs. Operating in a manner similar to a silo filler or the straw blower of a threshing ma-

chine, it blows mulch onto high steep slopes as well as on flatter areas, and reduces application costs appreciably.

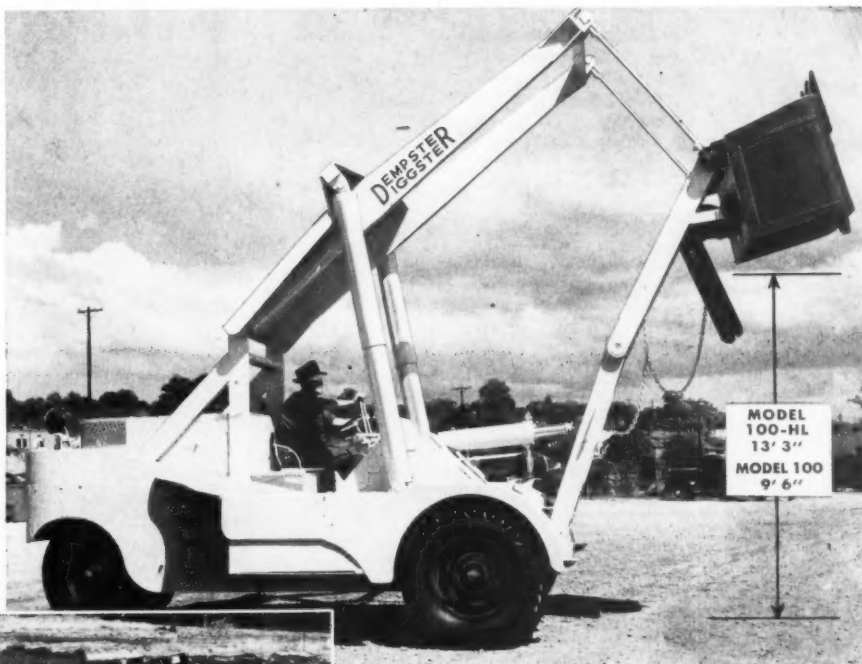
In general, having mulch applied in long strands is a definite advantage in keeping it in place, and some blowers deliver the material in that form. Others deliver the mulch in short pieces. However, either type of blower method results in an economy and uniformity of application not possible by hand.

Holding Mulch in Place

The problem of holding mulch in place against wind and gravity (on steep slopes), and against wind, heavy rain, and whipping by traffic movement (on shoulders, median strips, and islands) has been one that has kept up the cost of mulching operations, along with mulch-application cost. Among the hand

(Continued on next page)

Power-Packed 100% Hydraulic Performance



DEMPSTER-DIGGSTER OFFERS YOU BIG SHOVEL HYDRAULIC PERFORMANCE IN A SMALL, MOBILE UNIT...

The Dempster-Diggster is the only small shovel that offers you all these basic and important features of big shovels—*Simultaneous and Independent Crowd and Hoist . . . Hydraulic Crowding . . . Hydraulic Hoisting . . . Variable Crowd Action at any Dipper Position . . . Changeable Buckets.*

With these big shovel features, plus truck speeds on the job, and to and from jobs, the Dempster-Diggster enables you to speed up production for greater profits on jobs requiring excavation or loading!

Write for complete facts on this revolutionary, power-packed shovel. A product of Dempster Brothers, Inc.



Large photo shows position of bucket when at extreme height above ground. Two small photos illustrate how, in excavation or loading, bucket follows slope of material—getting a full bucket with every stroke. Dempster-Diggster digs-in 15 inches below grade and digs out a 15 to 18 foot bank.

DEMPSTER BROTHERS
443 Shea Building, Knoxville 17, Tennessee



Mulching Practices In Seeding Roadsides

(Continued from preceding page)

methods employed to hold mulch in place are: (1) stakes driven into slopes, sometimes with brush or poles attached; (2) a network of binder twine or light wire held in place by stakes or spikes; (3) soil spread lightly over the mulch; (4) mulch partially punched into the soil with shovels or spades; and (5) chicken or hog-wire fencing laid over mulch and anchored with stakes.

These hand methods have given satisfactory results and still have a place in roadside mulching on limited areas that require special attention or are not accessible to equipment. For extensive roadside areas in general, machinery has replaced hand fastening of mulch. On

shoulders and the flatter slopes, a farm-type disk harrow (with disk set straight) or a mulching tiller working on the same principle, can incorporate enough of the mulch into the soil to hold it in place. A rotary-type pulverizer or mixer can incorporate mulch into the soil to any degree desired. A sheepfoot roller combines compaction with mulch anchoring and can be used on steeper slopes than disks can, by operating it from the top of the slopes by cable and winch. Quick-germinating grains such as rye and oats (and in some sections of the country Sudan grass or millet) have proved helpful in holding mulch in place, when seeded lightly so that they will not interfere with the normal growth of the grasses or legumes seed on the area.

On the steeper roadside slopes, mulch is being successfully held in place by spraying it with asphalt.

(This method is not the same as the asphalt mulch previously described.) Material such as straw, hay, or roadside mowings is applied to the slope in the usual manner. Then only enough asphalt is sprayed on to hold the mulch particles together in a loose mat, giving a speckled appearance and by no means completely coating the mulch particles with asphalt. An RC-2 asphalt is most widely used for this purpose, at rates of 0.05 to 0.15 gallon per square yard, according to the steepness of slope, wind conditions, and type and thickness of mulch.

The synthetic resins previously mentioned as mulching materials have also been used on top of organic mulch to hold it in place.

Rather than attempt to apply seed and loose mulch to extremely high and steep slopes and fasten it in place after application, one seed-mulch method employs hay mats

held together by wire. These mats are fabricated quickly and easily on work tables, then are placed and staked on slopes to provide a combination seeding and mulching.

Variations in Procedure

Oddly enough, with mechanization of mulching has come a departure from standardization of the exact time of mulch application in the sequence of seeding and mulching operations. When mulching was strictly a hand operation, all seeding operations were completed and mulch was then applied. In general this same sequence is still followed when using mulch blowers and other machinery, but in attempts to reduce costs and speed operations still further, some variations in sequence of operations have been tried successfully and others are now being tested.

For example, mulch has been ap-

**UP and READY
to go in
23
minutes!**

**Save hundreds
of dollars on
move after
move!**

**Here's Why the BUCK
Automatically-Portable,
Heavy-Duty Hoisting
Machine Saves You
Time and Money
on Job after Job:**

Easily towed—even by a pickup truck—your BUCK is pneumatic trailer mounted... has finger-tip balance. One man makes the move—quickly... easily!

Ready-rigged, self-erecting, self-lowering tower unfolds like a jack-knife. It's the only complete, automatically-portable, heavy-duty hoisting machine in the world!

Completely set up and ready to operate in only 23 minutes... instead of hours! One man does the whole job! It raises 2000 lbs. at 100 feet a minute.

**Let us prove how YOU
can save \$170 to \$370
a job—over other hoists.
Ask for an on-the-job demonstration today.**

BUCK Automatically-Portable Heavy-Duty HOISTING MACHINE

**CONTRACTORS REPORT
THESE AVERAGE SAVINGS
OVER OTHER HOISTS!**

**Cost per job
OTHER HOISTS**

Moved in... erected... dismantled and removed—by 2 to 5 men in a matter of hours—at cost of \$200.00 to \$400.00 per job.

**Cost per job
BUCK HOIST
(automatically-portable)**

Moved in... erected... lowered and removed—by one man—at cost of only \$30 per job!

**AVERAGE
SAVING
\$170 to \$370
PER MOVE
over other hoists!**



Easily towed—even by a pickup truck—your BUCK is pneumatic trailer mounted... has finger-tip balance. One man makes the move—quickly... easily!



Ready-rigged, self-erecting, self-lowering tower unfolds like a jack-knife. It's the only complete, automatically-portable, heavy-duty hoisting machine in the world!

Completely set up and ready to operate in only 23 minutes... instead of hours! One man does the whole job! It raises 2000 lbs. at 100 feet a minute.

**Let us prove how YOU
can save \$170 to \$370
a job—over other hoists.
Ask for an on-the-job demonstration today.**

CHECK YOUR BUCK DEALER TODAY—or write direct to BUCK

ALABAMA, Birmingham
Leary & Owens Machinery Co., Inc.
ARKANSAS, Little Rock
Clark Equipment Co., Inc.
CALIFORNIA, Los Angeles
Grady Equipment Co.
CALIFORNIA, San Francisco
Beatty Safety Scaffolds, Inc.
CONNECTICUT, Waterbury
Contractor's Supply Co., Inc.
FLORIDA, Jacksonville
Harry's Crane Service
FLORIDA, Miami
A & W Engineering Co.
FLORIDA, Tampa
Chapman Machinery Co.
GEORGIA, Atlanta
W. C. Case & Co., Inc.
ILLINOIS, Oak Lawn
Tractor and Equipment Co.
INDIANA, Indianapolis
Reid-McComb Company, Inc.
IOWA, Sioux City
Safety Steel Scaffolds Co.
KENTUCKY, Louisville
Embry Brothers, Inc.

LOUISIANA, New Orleans
R. F. Messing Co., Inc.
LOUISIANA, Shreveport
Construction Machinery Corp.
MARYLAND, Baltimore
Equipment Rental Co.
MASSACHUSETTS, Boston
Merrill Scaffolding Co.
MICHIGAN, Detroit
Safety Steel Scaffolds, Inc.
MICHIGAN, Grand Rapids
Vos Equipment Co.
MINNESOTA, Minneapolis
Safety Steel Scaffolds Co.
MISSISSIPPI, Jackson
Equipment Incorporated
MISSOURI, Kansas City
Finkhouser Machinery Co.
MISSOURI, St. Louis
George F. Smith Co., Inc.
NEW JERSEY, Newark
Dole & Rankin, Inc.
NEW YORK, Albany
Albany Ladder Co., Inc.
NEW YORK, Buffalo
Builders Rental Equipment

NEW YORK, Syracuse
Builders Rental Equipment
N. CAROLINA, Charlotte
Contractors Service, Inc.
N. CAROLINA, Raleigh
J. B. Hunt & Sons, Inc.
OHIO, Columbus
E. W. Harman Co.
OKLAHOMA, Tulsa
Butler-Sparks Equipment Co.
PENNSYLVANIA, Philadelphia
Alliance Equipment Co.
PENNSYLVANIA, Pittsburgh
Equipment Rental Co.
S. CAROLINA, W. Columbia
State Machinery and Supply Co.
TENNESSEE, Memphis
Tri State Equipment Co., Inc.
TEXAS, Dallas
Safety Scaffolds Co. of Texas, Inc.
WASHINGTON, D. C.
Hudson Supply and Equipment Co.
WISCONSIN, Milwaukee
Stone Manufacturing Co.
COLUMBIA, S. A. Medallin
Alberto Walliser & Co. Ltda.

BUCK EQUIPMENT CORP.

208 BUTLER STREET
CINCINNATI 2, OHIO

THE GORMAN-RUPP DIAPHRAGM PUMP

**WATCH
THIS SPACE
FOR**

**Another
First**

**NOT ONLY BRAND NEW!
It's a New Concept—a New Design Approach—
THE FIRST REAL IMPROVEMENT EVER
in Diaphragm Pumps!**

As Much as 400% More Pumping!
On LESS Fuel—yes, LESS FUEL!
Much Longer Life—PUMP and DIAPHRAGM!
No SHOCK! No JERK! No JUMP!

**ANOTHER FIRST FOR
GORMAN-RUPP DESIGN AND
PUMP ENGINEERING DEVELOPMENT**

SEE IT IN THIS MAGAZINE

WATCH FOR MAY ISSUE, PAGE 80

THE GORMAN-RUPP COMPANY
MANSFIELD, OHIO



CONTRACTORS AND ENGINEERS

plied over a roughly prepared seed-bed, then seed and fertilizer in water suspension have been sprayed onto and through the mulch which was then fastened with asphalt spray. Another spray method calls for soil to be mixed with the seed and fertilizer in water, with the soil acting as a mulch anchor.

In a variation of the mulching without seeding idea previously described, mulch is spread on an unprepared slope area and followed with a seed and fertilizer spray.

On flatter areas with soil in a satisfactory physical condition, the seed fertilizer, and mulch have been applied to the unprepared area and all worked together with a rotary mixer, disk harrow, or mulching tiller.

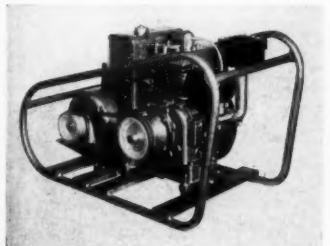
Research Still Needed

Experiments undoubtedly should and will continue with the exact method and sequence of mulching operations, but the basic purpose of mulching and the basic value of mulching to roadside-erosion control have already been established. New materials and methods can further reduce costs and increase benefits.

In addition to Harold J. Neale, Chairman, the Committee on Roadside Development includes the following: Frank H. Brant, P. H. Elwood, Wilbur S. Garmhausen, George B. Gordon, David R. Levin, Dr. John Monteith, Jr., Wilbur H. Simonson, and John L. Wright.

Gas-Driven Generator

A 2,000-watt gas-driven generator is offered by Pioneer Gen-E-Motor Corp., 5832 W. Dickens Ave., Chicago 39, Ill. The Model SS-3990 operates on 115-volt 60-cycle single-



phase ac current at 3,600 rpm. It has a Briggs & Stratton air-cooled 4.8-hp gasoline engine.

The unit has a voltmeter and two receptacles for 115-volt ac output up to 2,000 watts. It provides adequate power for supplying light for night work or for water-system pumps. It will start electric motors requiring overload capacity in excess of 37 amp.

For further information write to the company, or use the Request Card at page 18. Circle No. 792.

Literature on Filters

Literature on synclinal filters for noncorrosive liquids in hydraulic and low-pressure systems is available from Marvel Engineering Co., 625 W. Jackson Blvd., Chicago 6, Ill. The company's line includes models with capacities from 5 to 100 gpm.

The manufacturer stresses that the filters can be disassembled, without special skills or tools, for cleaning on the spot.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 845.

F. V. du Pont Is New Public Roads Chief

Francis V. du Pont of Wilmington, Del., took office on April 1 as Commissioner of the Bureau of Public Roads, in succession to Thomas H. MacDonald. Mr. MacDonald has retired at the age of 72 after a distinguished career which included 34 years as Commissioner of the BPR.

Mr. du Pont served as Commissioner of the Delaware State Highway Department from 1922 to 1949. For 23 years out of this period he was Chairman. During his term as Chairman, the dual-highway system was inaugurated and the Governor Printz Boulevard and other important roadways were constructed.

Mr. du Pont, who was graduated from the Massachusetts Institute of Technology, holds a Bachelor's degree in mechanical engineering.

**It's the
PREHY GROUTER and PLACER
that affords BIG savings on the job.**



Indispensable equipment for the
Efficiency and Economy so important
to Good Job Performance.

... for ...

Plastic & Fluid Pressure Grouting
Arresting Soil & Structural Settlement
Railroad Track & Ballast Grouting
Placing Insulation & dry aggregate
Pile Encasement & Column
Construction

Bulletin & Price List upon request

C. L. BALLARD
Successor to Prehy Co., Inc.
420 Lexington Ave., New York, N. Y.

PREHY Type "S" Grouter
Grouters, Concrete Guns, Jam Plugs, Driving Points, Couplings.



UNMATCHED TESTING FACILITIES...

one
of
many
reasons
for
Hyatt
leadership!

In testing laboratory or manufacturing plant, Hyatt's facilities are second to none. Continuing research in methods and materials, and exacting inspection with the finest in modern equipment, has made the Hyatt name a synonym for "highest quality." That's why Hyatt Roller Bearings are so widely used in design applications involving radial loads. Design engineers know that Hyatt bearings have been "performance-proved" for smoother, trouble-free operation and longer life. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.



HYATT

ROLLER BEARINGS



These newly designed Ford C-750 Series cab-forward trucks have wider 3-man cabs with full width seats; a new curved, one-piece windshield with 55 per cent more visibility; and a 4-foot wide rear window. Synchro-silent transmissions do away with double clutching.

Truck Line for 1953 Offers Driver Comfort

Outstanding features of the 1953 line of Ford trucks are the new cabs designed for greater driver comfort and the elimination of double-clutching through use of new-type transmissions on all models. The trucks have a one-piece curved windshield with swept-back pillar posts and 55 per cent greater visibility. The rear window is 4 feet wide. The driver sits on a wider more adjustable seat with five feet of hip room. The seats

have new springs and counter-shock seat snubbers which are said to help absorb road shocks.

The clutch and brake pedals have been repositioned so they are easier and more comfortable to operate. The controls, including the push-button starter, are grouped in front of the driver within easy reach.

Because wheelbases have been shortened 4 inches on all conventional series through the F-600 and 3 inches on Series F-700 through F-900, the trucks have a shorter turning radius and greater maneuverability. According to the manu-

facturer, they are also easier to handle and steer due to an increase in the front tread.

The 1953 line offers a choice of 5 V-8 and 6-cylinder engines, that range from 101 to 155 hp. Front and rear engine mounts have been

relocated to provide easier servicing of clutch and flywheel. The rear mounts have been moved from the transmission housing to the clutch and flywheel housing so that the clutch and transmission can be removed without disturbing the en-

when service
is important
think of
AMSCO



Made entirely of "The Toughest Steel Known," AMSCO Manganese Steel welded dippers use no rivets, but are fabricated by the modern, streamlining Plug-Welding method that permanently interlocks cast segments.

All AMSCO Manganese Steel products mean service and long life wherever impact and abrasion must be controlled. AMSCO Manganese Steel has the unique quality of actually becoming harder with use,

acquiring a high surface polish to shrug off grinding abrasion, while retaining body metal toughness.

AMSCO All-Manganese Steel Dippers are available in two-piece welded, three-piece renewable lip, and Missabi designs—or can be adapted to your unusual materials handling specifications. Also available in sizes to fit all power shovels.

Write AMSCO, Chicago Heights, Illinois, for bulletins on dippers and back-hoe buckets.

**AMERICAN
Brake Shoe
COMPANY**

AMERICAN MANGANESE STEEL DIVISION

395 EAST 14TH STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliet Steel Division, Joliet, Que. Amco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.



If repetition is any form of endorsement, the Jahn JT-409 Tilt Trailer is doing a good job for the Texas Highway Department. Only recently they purchased their ninth new 9-ton JT-409.

The JT-409 is a heavy-duty tilt trailer built for rugged treatment on all types of roads under the full gamut of climatic conditions. It would pay you to follow the lead of Texas by investigating this model as well as the full line of new Jahn Heavy Duty Trailers. Write for additional information by filling out and mailing the attached coupon.



PRESSED STEEL CAR COMPANY, INC.
JAHN TRAILER DIVISION
136th St. and Brandon Avenue
Chicago 33, Illinois Dept. CEM

PSC

Dear Sir:

Send me literature on the Jahn JT-409 Tilt Trailer or any other I have checked.

☐ Semi-trailers ☐ Heavy Duty Trailer Capacity.....

Name.....

Address.....

City..... State.....

**CLUTCHES
by
ROCKFORD**



**Smooths the Way
To Better Roads**

The GALION Three-Wheel ROLLER has to be extra rugged, sturdy and dependable to keep on rolling up profits for its owners. ROCKFORD CLUTCHES help it serve day-in-and-day-out with minimum maintenance cost, under most severe working conditions. Let ROCKFORD clutch engineers help specify heavy-duty power transmission controls for your machines.

**Send for This
Handy Bulletin**

Shows typical installations of ROCKFORD CLUTCHES and POWER TAKE-OFFS. Contains diagrams of unique applications. Furnishes capacity tables, dimensions and complete specifications.



ROCKFORD CLUTCH DIVISION

BORG-WARNER

314 Catherine Street, Rockford, Illinois, U.S.A.



The F-900 is the new heavyweight leader of the 1953 Ford truck line—the biggest truck ever built by Ford. Powered by a Cargo King overhead valve V-8 high-compression low-friction engine, it has a front-axle capacity rating of 8,000 pounds and a rear-axle rating of 21,000 pounds.

gine. All 3-speed transmissions have remote-control gear shift mechanism, including the 3-speed heavy duty.

The new trucks range from 4,000 pounds to 27,000 pounds GVW with up to 55,000 pounds GCW ratings in the new F-Series. The conventional F-Series line includes the F-100 pickup, panel, stake, and other models which are available with a choice of five transmissions including Fordomatic and automatic overdrive; the F-250 and F-350 light duty and the F-500 and F-600 heavy-duty trucks; and the F-700, F-750, F-800 and F-900 Big Jobs units.

The F-900, largest truck ever built by Ford, has front-axle capacity of 8,000 pounds, rear-axle capacity of 21,000 pounds, uses the OHV Cargo King V-8 engine and has a 12-inch clutch. Five-speed transmission with direct in fifth is standard equipment. Overdrive in fifth is optional. Air brakes are available at added cost. A 16x6-inch brake is standard equipment. Tire sizes run up to 1100x22, 14-ply.

In the cab-forward C-Series the engine has been moved forward 12 inches to provide a full-width cab seat and to eliminate the engine

tunnel. These units can haul 35-foot trailers legally in every state, the

manufacturer points out.

For further information write to The Ford Division of Ford Motor Co., P. O. Box 638, Dearborn, Mich., or use the Request Card at page 18. Circle No. 866.

Booklet on Mortar Cement

A booklet on mortar cement is available from the Universal Atlas Cement Co., 100 Park Ave., New York 17, N. Y. It discusses characteristics of the cement including plasticity, water retention, bond and durability, volume changes, yield, color, and strength.

The manufacturer points out that the product is not a portland cement but a cementitious material which, mixed with proper proportions and grading of sand, gives an adherent and homogeneous mortar. No plasticizing agent is needed.

To obtain this literature write to

the company, or use the Request Card at page 18. Circle No. 848.

Data on Pipe Threaders

Literature is available on a new adjustable pipe threader made by Beaver Pipe Tools, Inc., 325 Dana St., N. E., Warren, Ohio. The Model 26-R is a 1 to 2-inch threader which will cut standard, oversize, and undersize threads of uniform length. The tool has a "radio dial" size setting. Dies can be removed from the outside and without tools, the manufacturer states. The threader uses one set of dies to thread four sizes.

Other models in this threader come in sizes up to 12 inches.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 844.

Remember—Safety Is No Accident!



The Most Valuable Assemblage of Contractors' Machinery
Ever Offered at Public Sale



AT AUCTION

Earth Moving and Construction

CONTRACTORS' MACHINERY

Used in Building the Downsview, New York, Dam—Board of Water Supply Contract 401

On Route 30, Downsview, N. Y.

70 Miles East of Binghamton

TUESDAY, APRIL 28, 1953, at 10 A.M. on the premises

EUCLID BOTTOM DUMPS

34 Model 71FDT with 89W Wagons, 13 cu. yd. capy., 1951
10 Model 67FDT with 58W Wagons, 13 cu. yd. capy., 1950
8 Model 38FDT with 89W Wagons, 13 cu. yd. capy., 1950
34 Model 43FDT with 58W Wagons, 13 cu. yd. capy., 1946-1950

EUCLID END DUMPS

9 Model 8TD with 56Y Bodies, 16.8 cu. yds., 1950
5 Model 49FD with 48BY Bodies, 12 cu. yds., 1947
2 Model 49FD with 12BY Bodies, 12 cu. yds., 1947

EUCLID LOADERS

2 Model 98V with GM Diesel Engines, 1951
Model 109W Dolly for 98V Loaders, 1951
Model No. 38V with a Cummins Diesel Engine, 1946

SHOVELS and CRANES

2 No. 1055 P & H 3 cu. yd. Shovels with Buda Diesel Engines, 1948
No. 548 Bucyrus Erie 2½ yd. Shovel, Buda Lanova Powered, 1947
Day Smith Luger Crane, Type 100
Oshkosh Tractor Crane Model TE with Gar Wood Crane

EARTH PROCESSING PLANTS

Robins "Grizzly" Pervious Earth Treatment Plant, capy. 2600 cu. yds. (3500 tons) per hour
Robins "Grizzly" Impervious Earth Treatment Plant, capy. 1350 cu. yds. (1750 tons) per hour
Robins H D Scalper with LeRoi Gasoline Engine, 1950

TRACTORS and DOZERS

2 Allis Chalmers Model 8D19H with Bulldozers and Le Tourneau Power Control Units, 1948
3 International Model TD24 Tractors, 1951
15 Caterpillar Model D8, Series 2U and 8R Tractor Dozers with Power Control Units

GRADERS

Allis Chalmers Model HD-3, WGM Diesel Attachment and Scarifier, 1947
2 Caterpillar No. 12 Diesel Powered with Scarifier Attachment, 1946

TOURNAPULLS

4 Le Tourneau Model CIH with Cummins Diesel Engines, 1946

MISCELLANEOUS

K-30 Rooter
3 Rock Rakes
3 Rome Disc Harrows
16 Sheepfoot Rollers—assorted sizes and makes
Jacques Model K Hydraulic Auger
22 Kohler Lighting Plants from 1½ to 5 KW Capacity
4 Worthington 1500GPM 2-Stage Turbine Deep Well Type Pumps (2 Diesel Driven and 2 Electric Driven)
Tunnel Forms—30 ft. Unit. Non Telescopic Straddle Type Traveler
Blow-Knox Steel Panel Concrete Forms—approx. 20 tons
Lambert Elec. 3-ton Mine Hoist with 100 H. P. Westinghouse Motor
24 Atlantic Transformers from 15 to 100 KVA
9 New 3 to 25 H.P. Electric Motors
1950 Plymouth 4-Door Sedan
1948 Reo 2-ton Platform Truck

Sale By Order of

Bianchi, Central, Munroe-Langstroth, Rugo—A Joint Venture
Owners

The equipment may be inspected any week day during business hours from April 14th to day of sale—other inspections by appointment with the Auctioneers.

A Profusely Illustrated Descriptive Brochure is being prepared and will be mailed upon application to

SAMUEL T. FREEMAN & CO.
Auctioneers

1808-10 CHESTNUT STREET, PHILADELPHIA 3, PA.
80 FEDERAL ST., BOSTON 10, MASS.

dart
Vibrators are
Dependable



Dart
GM 240-D
Electric

Every Dart unit is precision engineered and built to heavy duty service specifications. Dart offers both gasoline and electric models—a size for every concrete vibrating job.

Dart's new GM 240-D Vibrator motor features double bearing suspension, pre-spun armature winding and electronically balanced armature for smooth running and long life. Protected against low voltage damage, too.

See your Dart dealer or write now for complete literature

Dart Mfg. & Sales Co.
1246 Champa Street
Denver



Wire-Rope Thimble

A new wire-rope clamp and thimble consists of two parts that fit so that there is no shear on the tightening bolts. The heavier the load the more tightly are the halves of the Newco clamp and thimble forced together. The bolts and nuts used are standard hardware.

The clamp, which is made of steel castings, comes in sizes for $\frac{1}{8}$ to 1-inch rope.

For further information write to the Newman Mfg. & Sales Co., Box 5939, Kansas City, Mo., or use the Request Card at page 18. Circle No. 854.

Maneuverable Dozer Unit

A self-contained wheel-mounted dozer unit is shown in a folder issued by Mixermobile Manufacturers, 8027 N. E. Killingsworth St., Portland 20, Oreg. Emphasis is on the maneuverability of the Dozermobile as action shots show twists and turns performed by the Model DM-1.

The manufacturer points out that maneuverability has been gained by hinging two power-axle elements together by a flexible steering coupling. The coupling also allows an

oscillating twist to the axles.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 863.

New Pipeline Filter

Four new small pipeline filters for compressed air or gas installations of 40-psi maximum pressures have been announced by the Dollinger Corp., Rochester 4, N. Y. The new filters do not have to be removed from the line for cleaning. One bolt loosens to make them accessible for inspection.

The AA Series of filters with absorption pads remove oil and water vapor from lines. The CH Series with radial-fin inserts filter dirt and pipe scale. The smaller size filter has a diameter of $3\frac{1}{2}$ inches and a length of $6\frac{1}{2}$ inches. A larger size is



$3\frac{1}{2}$ inches in diameter with a length of 10 inches.

For further information write to the company, or use the Request Card at page 18. Circle No. 794.



You can cut dollars off every rolling operation—whether paving a walk or a highway—when you use an Essick roller! They put the weight where it really counts, on the compaction roll!

CHECK THESE EXTRA ESSICK ADVANTAGES!

- **Adjustable roller weight**—water ballast system affords variable compaction to fit particular job.
- **Profit-saving operation**—immediate direction change—no pause at end of run to mar blacktop and require expensive hand-iron work.
- **Speedy compaction**—Essick Road Rollers effectively work a larger area in a shorter time than any other rollers in their size range!

Compare these compaction ratios with any other

Model	Tons	Compaction, lbs. per lineal inch
200	$1\frac{1}{2}$ to 2	60 to 110
300	2 to 3	110 to 148
400	3 to 4	105 to 160
500	$3\frac{1}{2}$ to 5	156 to 200

SEE YOUR NEARBY ESSICK DEALER OR WRITE DIRECT

Sales and Service Coast to Coast and in Foreign Countries



New WILEY Books

Now . . . the first complete basic book on **FOUNDATION ENGINEERING**

By RALPH E. PECK, University of Illinois, WALTER E. HANSON, Illinois Division of Highways and THOMAS H. THORNBURN, University of Illinois

Here is complete one-book coverage of elementary soil properties, foundation practices, foundation selection, and structural design. It tells how to investigate and evaluate subsurface conditions, select most suitable foundations for a given site, judge the performance of each foundation type in use, and design the structural elements of the type selected. 1953 410 pages illus. \$6.75

New, streamlined 7th edition

SEWERAGE AND SEWAGE TREATMENT
By HAROLD E. BABBITT, University of Illinois
674 pages illus. \$8.00

Now more useful than ever

ESHBACH'S HANDBOOK OF ENGINEERING FUNDAMENTALS
Revised 2nd Edition. By 39 Famous Specialists—
Edited by OVID W. ESHBACH,
Dean, Northwestern Technological Institute
1952 1322 pages illus. \$10.00

New, up-to-date 2nd edition

SIMPLIFIED DESIGN OF ROOF TRUSSES FOR ARCHITECTS AND BUILDERS
By HARRY PARKER, University of Pennsylvania
1953 292 pages illus. \$4.00

JOHN WILEY & SONS, Inc.,
440 4th Ave.,
New York 16,
N.Y.

Mail Coupon for FREE Examination

Please ship me books checked below on approval:

- ☐ FOUNDATION ENGINEERING, \$6.75
☐ SEWERAGE AND SEWAGE TREATMENT, \$8.00
☐ HANDBOOK OF ENGINEERING FUNDAMENTALS, \$10.00
☐ SIMPLIFIED DESIGN OF ROOF TRUSSES, \$4.00

Within 10 days I will remit full price plus postage of any book I wish to keep, and return any I do not wish to keep.

Name

Address

City..... Zone..... State.....

SAVE MORE: Enclose full payment now and we stand all packing and shipping charges. Prompt refund on any books you return. (CEM-63)

INSLEY

TYPE

WB

30 Ton Capacity

Crawler Mounting

Carrier Mounting

Lorry Mounting

• Crane • Shovel • Clamshell
• Dragline or Hoe Attachments
• Crawler • Lorry
or Carrier Mountings
• Gasoline • Diesel
or Electric Power

INSLEY MANUFACTURING CORPORATION
INDIANAPOLIS 6, INDIANA

CONTRACTORS AND ENGINEERS

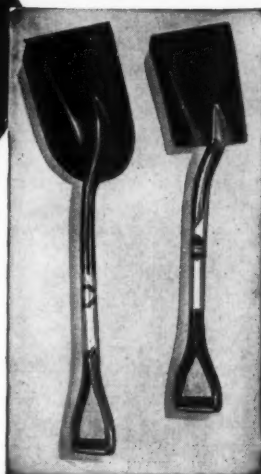
INGERSOLL SHOVELS

...Edges won't split or curl!

The Special Tillage Steel, known as TEM-CROSS, used in the manufacture of all Ingersoll Shovels, was developed in our own steel mills. By cross-rolling and special heat-treating, we give this steel an interlocking, mesh-grain structure that resists splitting.



Inquiries are invited
INGERSOLL STEEL DIVISION
Borg-Warner Corporation
New Castle, Indiana



All Blade Finishes remain Black finish, except Shovels and Spades in Alloy, A and B Grades, which may be furnished with face polished and velvet back, or full polished.

INGERSOLL SHOVELS

"A Borg-Warner Product"

Four Major Facts about C&E

1. It carries more editorial material than any other monthly publication in the field.
2. It also carries a higher proportion of editorial to advertising content.
3. C&E carries more display advertisers than any other monthly, and,
4. More exclusive advertisers.

This leadership pays off in readership and produces inquiries and orders for advertisers. It helps explain why **CONTRACTORS AND ENGINEERS** carries more advertisers, and more exclusive advertisers than any other monthly in the construction market.

A 2-line inquiry will bring you the facts you want about the huge construction market.

Contractors and Engineers

the *NEWS*paper of highway and heavy construction

470 Fourth Ave., New York 16, N. Y.

INDEX TO ADVERTISERS

(Continued from page 143)

Superior Concrete Accessories, Inc.	89	Warren-Knight Co.	50
Swenson Spreader & Mfg. Co.	43	Water Seals, Inc.	98
Symons Clamp & Mfg. Co.	38	Watson-Stillman Fittings Div.	51
Templeton, Kenly & Co.	114	Watts & Co., Charles R.	122
Termite Drills, Inc.	103	Waukesha Motor Co.	60
Texas Co., Asphalt	2	Wellman Engineering Co.	38
Texas Co., Lubricants	10, 11	Wellman Co., S. K.	80
Thev Shovel Co.	121	Wheller Paving Accessories Co.	113
Thompson Chemicals Corp.	64	White Co., David	60
Thurman Machine Co.	86	White Mfg. Co.	39
Tilden Tool Mfg. Co.	52	Whiteman Mfg. Co.	101
Timken Roller Bearing Co.	93	Whitestown Trencher Co., Inc.	84
Tractor Spreader Co.	110	Wiley & Sons, Inc., John	140
Transport Trailers, Inc.	82	Willard Concrete Machinery Sales Co.	119
Ulrich Products Corp.	113	Wincharger Corp.	43
Union Wire Rope Corp.	58, 59	Winpower Mfg. Co.	57
Unit Crane & Shovel Corp.	82	Winslow Scale Co.	75
United States Rubber Co.	111	Wisconsin Motor Corp.	84
Universal Atlas Cement Co.	15	Wood Mfg. Co.	78
Van Brush Mfg. Co.	74	Worthington Corp., Construction Equip. Div.	117
Vibro-Plus Products, Inc.	126	Wright Co.	47
Vulcan Iron Works	83	Wyandotte Chemicals Corp.	84
Vulcan Tool Mfg. Co.	111	Wyzenbeek & Staff, Inc.	88

We guarantee this if you make sure to specify...
INGERSOLL SHOVELS

TRADING POST

CLASSIFIED ADVERTISING

An advertising inch in the Trading Post is measured 7/8-inch vertically on one column. Space reservations close in the New York office on the 10th of the month preceding publication. Send your classified copy to:

THE TRADING POST,
Contractors & Engineers
470 Fourth Avenue,
New York 16, N. Y.

IMMEDIATE DELIVERY

- 1—Allis-Chalmers Model B tractor with mower.
- 1—Allis-Chalmers AD-3 Motor Patrol completely rebuilt & guaranteed.
- 1—Bros Model SC-55 skid mounted steam generator.
- 1—International TD6 with Duncan Bulldozer, A-1 cond., 2 yrs. old.
- 1—Novo traffic line marker.
- 1—Buckeye Model 402 Ditcher.
- 1—5/8 yard Northwest dragline clamp shell combination. New Motor.
- 1—A-C Model HD5G Front End Loader. Completely rebuilt.
- 1—Caterpillar Model D-4, w/traxcavator, good working condition.
- 1—Caterpillar Model D-2 End Loader, good working condition.
- 1—Le Tourneau Model FP Scraper, excellent condition.
- 1—Used Allis-Chalmers HD7 with Henry hydraulic angle dozer and two-wheeled hydraulic scraper.
- 1—Completely reconditioned Allis-Chalmers HD10 with a Gar Wood hydraulic bulldozer.

Illinois Road Equipment Co.
1310 East Jefferson Street
SPRINGFIELD, ILLINOIS
Phone 2-7709



STEEL PIPE STEEL

ALL SIZES AND TYPES
ANY QUANTITY

OFFER US YOUR SURPLUS NEW PIPE
MIDCONTINENT TUBE SERVICE, INC.
SPECIALISTS IN LARGE O.D. HEAVY WALLS.
CARBON AND ALLOY
2308 Oakton St., Evanston, Ill. DAVIS 8-4030

PRICED TO SELL

Nine Concrete Truck Mixers completely reconditioned and in excellent condition.
#28, one 1944 Brockway truck, Model 152W mounted with 4 c.y. Rex horizontal mixer.
#38, one 1942 Brockway truck, Model 152W mounted with 4 c.y. Rex horizontal mixer.
#31—#32—#34, three 1940 Brockway trucks, Model T.M. Spec. each mounted with 4 c.y. Rex horizontal mixers.
#4—#6—#12—#16, four Brockway trucks, Model T.M. Spec. each mounted with a 3 1/2 cu. yd. Rex horizontal mixer.
All equipment is currently in operation and can be seen at our plant. You can buy these nine truck mixers for about what two new units would cost you.

HOWAT CONCRETE COMPANY, INC.
South Capital at S Street
Washington 4, D. C.
Phone: Lincoln 6-5522

DECALS

SAVE UP TO 25% ON YOUR DECALS

10 DAY DELIVERY

FOR PRICES SEND ROUGH PENCIL SKETCH OR DECAL YOU ARE NOW USING

MIRACLE DECAL CO.
734 South Washington
WICHITA, KANSAS

Superintendents & Project Managers Training Course

All instruction by mail. Send today for sample lesson and complete details
GEO. E. DEATHERAGE & SON
411 — So. 5th Ave.,
Lake Worth, Florida

"BUY BONDED"

"Your Guaranteed Equipment"
Compare our Prices! Then Write, Wire or Phone. It's in stock.

BUILD YOUR OWN CONVEYORS

3-roll Troughing idlers for these sizes:
14" belt \$16.50 24" belt \$18.75
16" belt 17.25 30" belt 19.50
18" belt 18.00 36" belt 20.25
42" belt \$21.00
1-roll Return idlers for these sizes:
14" belt \$ 8.25 30" belt 8.75
16" belt 8.75 36" belt 8.75
24" belt 7.50 42" belt 9.50
48" belt \$10.25
All steel. Interchangeable with other well-known makes. Replaceable ball bearings. Rust-proof ball races; maintenance is negligible.

CONVEYOR BELTING

Famous brands at deep cut prices.

Width	Ply	Cover	Over	Caravan	Price
18"	4	1/2"	1/32"	28 oz.	2.50/ft.
24"	4	1/2"	1/32"	28 oz.	3.25/ft.
30"	4	1/2"	1/32"	28 oz.	3.97/ft.
36"	4	1/2"	1/32"	28 oz.	4.70/ft.
48"	4	1/2"	1/32"	28 oz.	6.16/ft.

HEAD AND TAKEUP PULLEYS

All welded steel head and tail pulleys, and assemblies complete. Priced from\$60.00

VIBRATING SCREENS

Heavy duty eccentric-shaft types; 1 to 5 decks. 8' x 8' to 5' x 14'. Others from 2' x 4'. Wire cloth or plate included to your specifications.
Priced from\$431.00

PAN AND RECIPROCATING FEEDERS

Complete with motor and drive. 15 to 235 tons per hour capacity. Priced from\$423.00

TRUCK SCALES

20 Ton Truck Scales \$525.00
26 Ton Truck Scales \$582.00
33 Ton Truck Scales \$655.00
Others to 50 ton capacity. All scales complete with structural steel, parts and weighing beams for most makes of motor truck scales.

Write for Catalog and Prices

Bonded Scale and Machine Co.
45 Bellview Columbus 7, Ohio
PHONES: Garfield 2106; FR. 6-5995, Evenings

CONSTRUCTION ESTIMATOR and COST CONTROL MAN

Must be thoroughly experienced in quantity take-offs and estimating and have successful performance record in competitive bidding. Cost control experience required. Background in Power Plant work, Process Piping and General Industrial Construction absolutely essential. We are looking for a man who has been successful as a Chief Estimator and is seeking a permanent staff position. State education, experience, and salary requirements. All applications will be acknowledged. Location Philadelphia.

Address Box 370
Contractors and Engineers, 470 4th Ave.,
New York 16, N.Y.

SALESMAN WANTED

in Upper Peninsula of Michigan. Experience preferred in earthmoving and construction equipment sales. Send all particulars, qualifications, and photograph.

Brebner Machinery Co., Inc.
Marquette, Michigan

STOP that WATER

With FORMULA NO. 640

A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—hold 1250 lbs. per sq. ft. hydrostatic pressure. Cuts cost: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.
HAYNES PRODUCTS CO., OMAHA 3, NEBR.

Give Generously to the Red Cross

Manufacturer Memos

Hyster Eastern Managers

Four managers for eastern districts were recently appointed by Hyster Co., Portland, Oreg., manufacturer of material-handling equipment.

Robert Lange will direct the east-central district including the Washington, D. C., office. He has worked with Hyster for 12 years in various departments of the company. Art Morris, with Hyster since 1952, takes over the north-central district and eastern Canada. Walt St. Clair, who directs the mid-central district, has been associated with the company for 6 years. Robert Hile will handle the northwestern district. He joined the company in 1946.

A fifth appointment is that of J. W. Morgan as Assistant Sales Manager for eastern industrial truck sales. He will work under R. F. Moody, Sales Manager of the Danville, Ill., plant.

Howerth Rejoins Gar Wood

H. J. Howerth, Jr., has been appointed Assistant Sales Manager of the Wayne Division of Gar Wood Industries, Inc., Wayne, Mich. The Division manufactures truck dump bodies and hoists, refuse-collection units, winches, cranes, and elevating end-gates.

Before his recall to military service two years ago Mr. Howerth was Wayne's Chief Sales Engineer.

Fairbanks-Morse Manager

William B. Morse, former Assistant to the Manager of the Detroit, Mich., sales and service branch of Fairbanks, Morse & Co., Detroit, has been appointed Manager, succeeding E. J. Hay, who recently died.

Mr. Morse is a great-grandson of the founder of the company and a son of Robert H. Morse, Jr., President. He has been with the company since 1946 when he started in the Beloit Works. From 1948 until 1951 he was salesman for the San Francisco, Calif., branch where he served until his transfer to Detroit in 1951.

Foster Elects President

Byron L. Foster has been elected President of L. B. Foster Co., Pittsburgh, Pa., suppliers of steel-sheet piling, railroad trackage, and pipe.



Byron L. Foster is the new President of L. B. Foster Co.

He succeeds Lee B. Foster, who founded the firm 50 years ago and has now become Chairman of the Board of Directors.

The firm also has offices and warehouses located in New York, N. Y.; Chicago, Ill., and Houston, Texas.

Thor Changes Its Name

Independent Pneumatic Tool Co., Aurora, Ill., has changed its 60-year-old corporate name. In order to avoid confusion, the trade name Thor (used to identify all the firm's power tools since 1893) has been embodied in the new name, which is now Thor Power Tool Co.

A recent appointment is that of Maynard T. Murray to the newly created post of Vice President in Charge of Manufacturing. He will make his headquarters at the main works of Thor Power Tool Co. in Aurora.

Air Reduction Appoints

A. C. Brown, Jr., former Manager of the Central Region of Air Reduction Sales Co., has been appointed General Sales Manager and will make his headquarters at 60 E. 42nd St., New York, N. Y. He joined Air Reduction in 1935 and became Manager of the Central Region in 1950.

Other appointments by Air Reduction Co., Inc., are those of J. H. Keeney as Regional Manager in succession to Mr. Brown; J. H. Hart, who takes Mr. Keeney's former post of Administrative Assistant in Pittsburgh; and R. A. Jamieson, who succeeds Mr. Hart as Detroit District Manager.

Gradall Representative

The Warner & Swasey Co., Cleveland, Ohio, has appointed William C. Worthington new District Representative of the Gradall Division in the southeast region. He will make his headquarters at 1709 Candler Building, Atlanta 3, Ga., and his territory will include Florida, Georgia, South Carolina, Tennessee, Alabama, and Mississippi.

Flexicore Now in Michigan

The first plant in Michigan to manufacture Flexicore precast-concrete slabs opened March 1 in Livonia, Mich. It is the Michigan Flexicore Division of Price Bros., Co., which will produce Flexicore floor and roof slabs for northern Ohio as well as eastern Michigan. William Cory is Sales Manager for the new firm.



Stocks of Bethlehem wire rope are usually no farther away than your telephone. Warehouse facilities are geared for high-speed service on emergency calls.

Heading your way in a hurry

Ever had a job stalled by a sudden emergency need for wire rope? A job where every hour, every minute, counted?

Those things happen. And when they do it's good to know that you're always near a Bethlehem mill depot or distributor. Through a large, quick-acting distribution system, Bethlehem makes it easy to get the rope you need . . . the proper size, type, and grade. Whether you're out in the sagebrush or working a job in the heart of the city, you're never very far from

a large, convenient warehouse supply.

So put in a call, outline your needs, and the Bethlehem rope you want will soon be heading your way. Sound, dependable rope. There's none better. And there's no better, friendlier service than Bethlehem and its hundreds of distributors can offer you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

When you think WIRE ROPE

... think BETHLEHEM



Acrow, Inc.	16,	17
Adams Mfg. Co., J. D.		71
Aero Products Co., Inc.		123
Air Placement Equipment Co.		78
Allison Div. of GMC		134
Allis Chalmers Tractor Div.	87, 72,	73
Aluminum Industries, Inc.		23
American Cast		64
American Hoist & Derrick Co.		31
American Manganese Steel Div.		138
Armco Drainage & Metal Prod., Inc.		34
Arps Corp.		105
Austin-Western Co.		

Badger Machine Co.	130
Baker Mfg. Co.	67
Baker-Lull Corp.	62
Baldwin-Lima-Hamilton Corp.	120
Ballard, C. L.	137
Barber-Greene Co.	85
Barco Mfg. Co.	38
Barnes Mfg. Co.	88
Bartlett Mfg. Co.	117
Berger & Sons, Inc., C. L.	112
Bethlehem Steel Co.	142
Blaw-Knox Equip. Div., Blaw-Knox Co.	21
Brushmaster Saw, Inc.	127
Buck Equip. Corp.	136
Bucyrus-Erie Co.	68, 69
Buda Co.	128

Calif. Welding & Blacksmith Shop, Inc.	79
Camm Mfg. Co.	102
Canton Mfg. Co.	108
Cardox Corp.	61
Caterpillar Tractor Co.	7, 14, 143
Celotex Corp.	50
Central Scientific Co.	40
Century Engineering Co.	36
Chain Belt Co.	77
Chausse Mfg. Co., Inc.	56
Chevrolet Motor Div., GMC	108
Chicago Pneumatic Tool Co.	56
Cimco	91
Cleveland Trencher Co.	122
Clipper Mfg. Co.	57
Coiffing Hoist Co.	107
Complete Machinery & Equip. Co., Inc.	100
Concrete Pipe Machinery Co.	34
Construction Machinery Cos.	124
Continental Rubber Works	83
Cummer & Son Co., F. D.	91

Dart Mfg. & Sales Co.	139
Dempster Bros., Inc.	135
Detroit Diesel Engine Div., GMC	46
Dewey & Almy Chemical Co.	47
Dudgeon, Inc., Richard	37

Eagle Iron Works	128
Eaton Mfg. Co.	103
Eimco Corp.	5
Essick Mfg. Co.	140
Euclid Road Machinery Co.	76

Felker Mfg. Co.	86
Fleco Corp.	6
Flink Co.	90
Foote Co., Inc.	92
Ford Motor Co.	33, 41
Freeman & Co., Samuel T.	139
Fuller Mfg. Co.	104

Galion Allsteel Body Co.	90
Gar Wood Industries, Inc., Findlay Div.	130
General Steel Tank Co.	131
General Tire & Rubber Co.	83
Gladden Products Corp.	97
Gledhill Road Machinery Co.	51
Goodall Rubber Co., Inc.	106
Gorman-Rupp Co.	36
Griffin Wellpoint Corp.	136
Gulf Oil Corp.	75
Gunderson-Taylor Machinery Co.	125

Harnischfeger Corp.	116
Hauck Mfg. Co.	42
Hayward Co.	22
Heede, Inc., B. M.	9
Heil Co.	43, 94, 95
Heltzel Steel Form & Iron Co.	65
Hendrix Mfg. Co., Inc.	63
Hercules Steel Prod., Corp.	35
Hetherington & Berney Inc.	131
Highway Equipment Co., Inc.	114
Horn Co., Inc., A. C.	54, 125
Hough Co., Frank G.	102
Huber Mfg. Co.	102
Hunt Process Co.	131
Hyatt Bearings Div., GMC	37

Ingersoll Steel Div.	141
Insley Mfg. Corp.	140
International Harvester Co.	44, 45
Iowa Mfg. Co.	24, 25, 122

Jackson Vibrators, Inc.	115
Jaeger Machine Co.	19, 109
Jahn Trailer Div.	138
Johnson-March Corp.	30
Joy Mfg. Co.	74

Koehring Co.	62,	63
Kohler Co.		81

Laclede Steel Co.	106
Le Tourneau, Inc., R. G.	119, 144
Littleford Bros., Inc.	132
Lucey Boiler & Mfg. Corp.	23
Madsen Iron Works, Inc.	13
Maginnis Power Tool Co.	82
Mall Tool Co.	90
Manco Mfg. Co.	119
Master Vibrator Co.	42
McCaffrey-Ruddock Tagline Corp.	60
McConaughay, K. E.	39
McKiernan-Terry Corp.	126
McKinney Drilling Co.	85
McKissick Products Corp.	18
Mead Specialties Co.	114
Meili-Blumberg Corp.	107
Miller Research Engineers	129
Minneapolis-Moline	35
Miracle Decal Co.	141
Mixer Mfrs. Bureau	52
Mixermobile Distributors, Inc.	66
Morse-Starratt Products Co.	98

Naylor Pipe Co.	118
Northfield Iron Co.	33
Ohler Machinery Co.	104
Oliver Corp.	100
Onan & Sons, Inc., D. W.	115
Ottawa Steel Products, Inc.	40
Overman Mfg. Co., I. J.	107
Owen Bucket Co.	51
Pacific Engineering Sales Co.	35
Paper-Calmenson & Co.	32
Pf. Flexible Metallic Tubing Co., Inc.	70
Pfaff & Kendall	132
Phoenix Products Co.	81
Pioneer Engineering Works, Inc.	48, 49
Pioneer Gas-E-Motor Corp.	41
Pitman Mfg. Co.	118
Potter Iron Works, Inc.	128
Pressed Steel Car Co., Inc.	138
Quinn Wire & Iron Works	70
Rice Pump & Machine Co.	93

Rockford Clutch Div.	138
Roeth Vibrator Co.	92
Rogers Brothers Corp.	81
Rotatape, Inc.	110
Salem Tool Co.	98
Sasgen Derrick Co.	23
Sauerman Brothers	79
Schramm, Inc.	133
Seaman Motors, Inc.	29
Servicized Products Corp.	112
Shovel Supply Co.	124
Sinclair Refining Co.	99
Slope Meter Co.	65
Soilaire Industries	91
Southwest Welding & Mfg. Co.	37
Sprague & Henwood, Inc.	109
Standard Oil Co., (Indiana)	123
Standard Steel Works	18
Sterling Wheelbarrow Co.	106
Storer Decal Co.	53
Stulz-Sickles Co.	42

(Continued on page 141)

The powerful, durable Cat* Motor Grader not only is equal to the toughest jobs, but it does them quickly and inexpensively. It has a performance record and life line which no comparable equipment can match.

Rugged construction backed up by quality materials gives the No. 12 the muscle to endure rough going. It has a circle built of box section that weighs 35 pounds per foot — the strongest circle used on any grader!

Because engine, frame and controls are Caterpillar, you get quick, reliable service from *one* dealer. He will be happy to demonstrate the entire line so you can see for yourself why 99 per cent of all Cat Motor Graders ever built still are in use, still building profits.

CATERPILLAR*

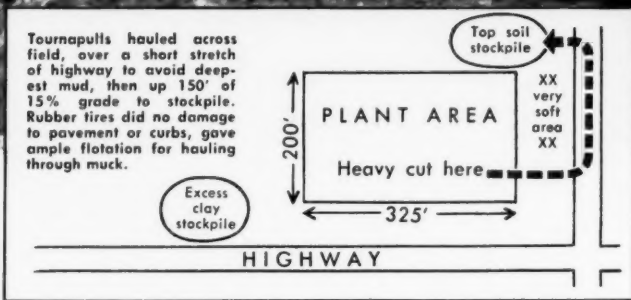
**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**

Rain 16 days in 31

fails to stop L. B. McCowan's D Tournapulls



Positive ejection keeps bowl clean even in sticky, lumpy clay, speeds cycle time. Driving 35 miles to this job, the 2 rigs averaged 18 m.p.h., despite heavy Buffalo city traffic.



Stripping, grading and excavating 35,000 cu. yds. for Buffalo Arms defense plant in Akron, New York, Contractor L. B. McCowan's 2 D Tournapulls moved 108 to 120 pay yards per hour under "near shut-down" conditions.

All material was tough, heavy clay . . . its normal stickiness made worse by 16 days of rain which fell during the month of work. Deep mud pockets dotted the 200' x 325' work area. Footing was slick . . . loading handicapped by a matting of wet weeds . . . haul slowed by 150' of slippery 15% grade on approach to stockpile.

Deliver 24 loads per hour

Under these tough conditions, each Tournapull completed average 900' cycles in 4.6 minutes. Loads (with 68 h.p. pusher) averaged 4½ to 5 pay yards each, for a unit output of 54 to 60 pay yards per 55-minute hour. So well did the "D's"

perform that, when available, 2 additional "D's" were rented and brought in to speed the job still further.

Performance like this is by no means exceptional for fast, mobile "D's". Big 18.00 x 25 low-pressure tires give flotation to roll over soft mud. Constant flexing of tires keeps treads clean for maximum traction in slippery materials. Tournapull's power-proportioning differential automatically delivers up to 4 times more power to drive wheel on firmest footing. Power steer enables operators to "walk" units out of mud holes. The resulting extra-profit hours through bad weather provide more *earning* days in a longer season . . . can be very important to you.

Get all the facts

Investigate these and other profit-making features of new electric-control Tournapulls for yourself. Contact your Le-Tourneau Distributor for owner-verified job reports covering job conditions similar to yours. There's a size Tournapull to fit your needs . . . this 7-yd., 122 h.p. "D" . . . the 14-yd., 186 h.p. "C" . . . the 27 or 42-yd., 275 or 450 h.p. custom-built "A".



Push-loaded by 68 h.p. tractor, Tournapull heaped 4½ to 5 pay yards of wet clay in 45 seconds.



R. G. LeTOURNEAU, INC., Peoria, Illinois

HIGH-SPEED, RUBBER-TIRED EXCAVATING • HAULING • LIFTING EQUIPMENT

Tournapull—Trademark Reg. U. S. Pat. & Tm. Off.

